Fig.1

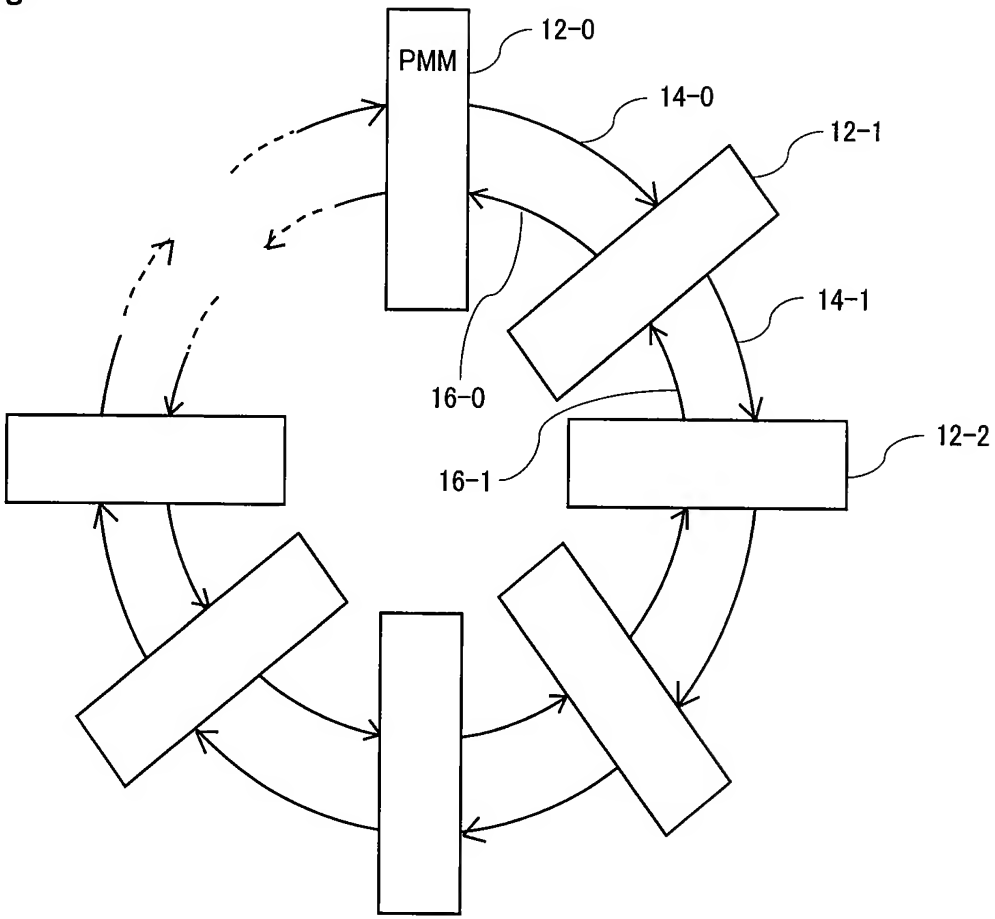


Fig.2

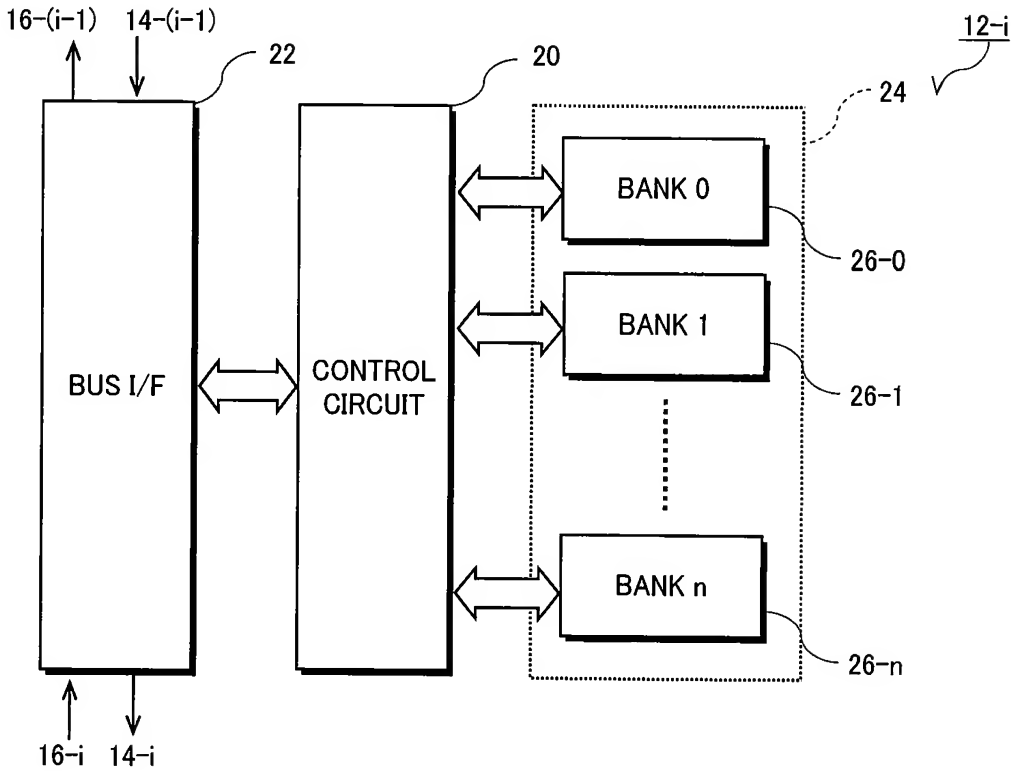

16-(i-1)
14-(i-1)
22
20
12-i
24
BANK 0
26-0
BANK 1
26-1
BUS I/F
CONTROL CIRCUIT
BANK n
26-n
16-i
14-i

Fig.3

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48
3	FEMALE	16	172	48
4	MALE	28	181	78
5	FEMALE	20	166	55
6	FEMALE	16	168	52
7	MALE	33	174	65
8	MALE	24	177	64
9	FEMALE	18	170	55

Fig.4

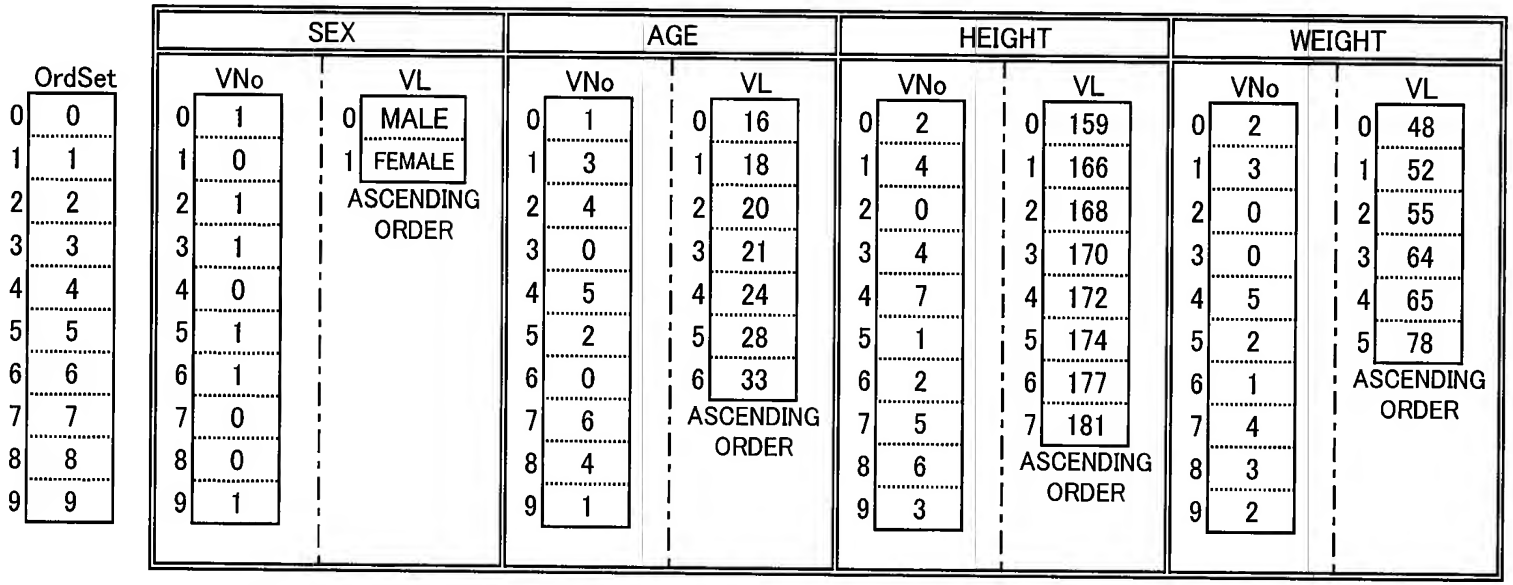

OrdSet
0 0
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9
SEX
VNo
0 1
1 0
2 1
3 1
4 0
5 1
6 1
7 0
8 0
9 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
AGE
VNo
0 1
1 3
2 4
3 0
4 5
5 2
6 0
7 6
8 4
9 1
VL
0 16
1 18
2 20
3 21
4 24
5 28
6 33
ASCENDING ORDER
HEIGHT
VNo
0 2
1 4
2 0
3 4
4 7
5 1
6 2
7 5
8 6
9 3
VL
0 159
1 166
2 168
3 170
4 172
5 174
6 177
7 181
ASCENDING ORDER
WEIGHT
VNo
0 2
1 3
2 0
3 0
4 5
5 2
6 1
7 4
8 3
9 2
VL
0 48
1 52
2 55
3 64
4 65
5 78
ASCENDING ORDER

Fig.5

OFFSET= 0

PMM-0

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48

OFFSET= 3

PMM-1

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	16	172	48
1	MALE	28	181	78

OFFSET= 5

PMM-2

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	20	166	55
1	FEMALE	16	168	52
2	MALE	33	174	65

OFFSET= 8

PMM-3

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	MALE	24	177	64
1	FEMALE	18	170	55

Fig.6

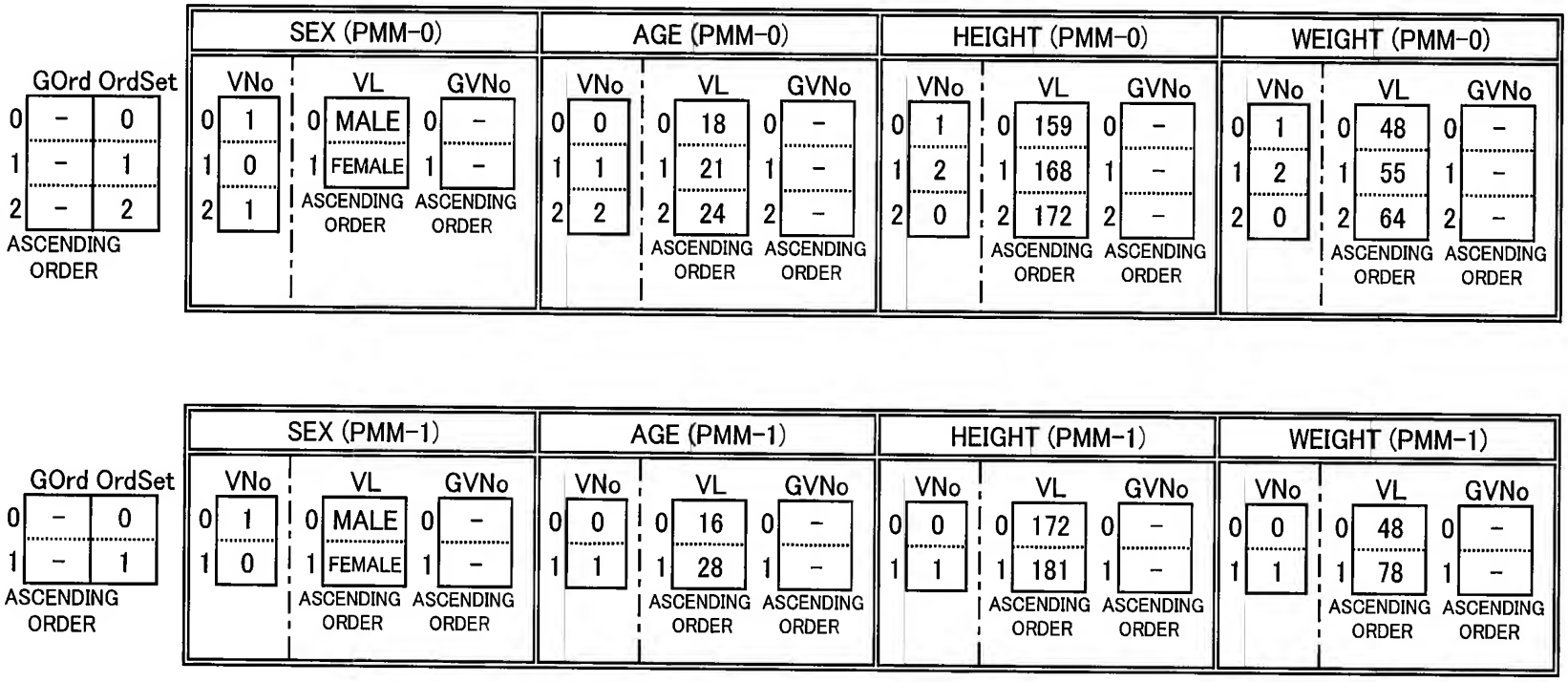

GOrd OrdSet
0 - 0
1 - 1
2 - 2
ASCENDING ORDER
SEX (PMM-0)
VNo
0 1
1 0
2 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo
0 -
1 -
2 -
ASCENDING ORDER
HEIGHT (PMM-0)
VNo
0 1
1 2
2 0
VL
0 159
1 168
2 172
ASCENDING ORDER
GVNo
0 -
1 -
2 -
ASCENDING ORDER
WEIGHT (PMM-0)
VNo
0 1
1 2
2 0
VL
0 48
1 55
2 64
ASCENDING ORDER
GVNo
0 -
1 -
2 -
ASCENDING ORDER
GOrd OrdSet
0 - 0
1 - 1
ASCENDING ORDER
SEX (PMM-1)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
HEIGHT (PMM-1)
VNo
0 0
1 1
VL
0 172
1 181
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
WEIGHT (PMM-1)
VNo
0 0
1 1
VL
0 48
1 78
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER

Fig.7

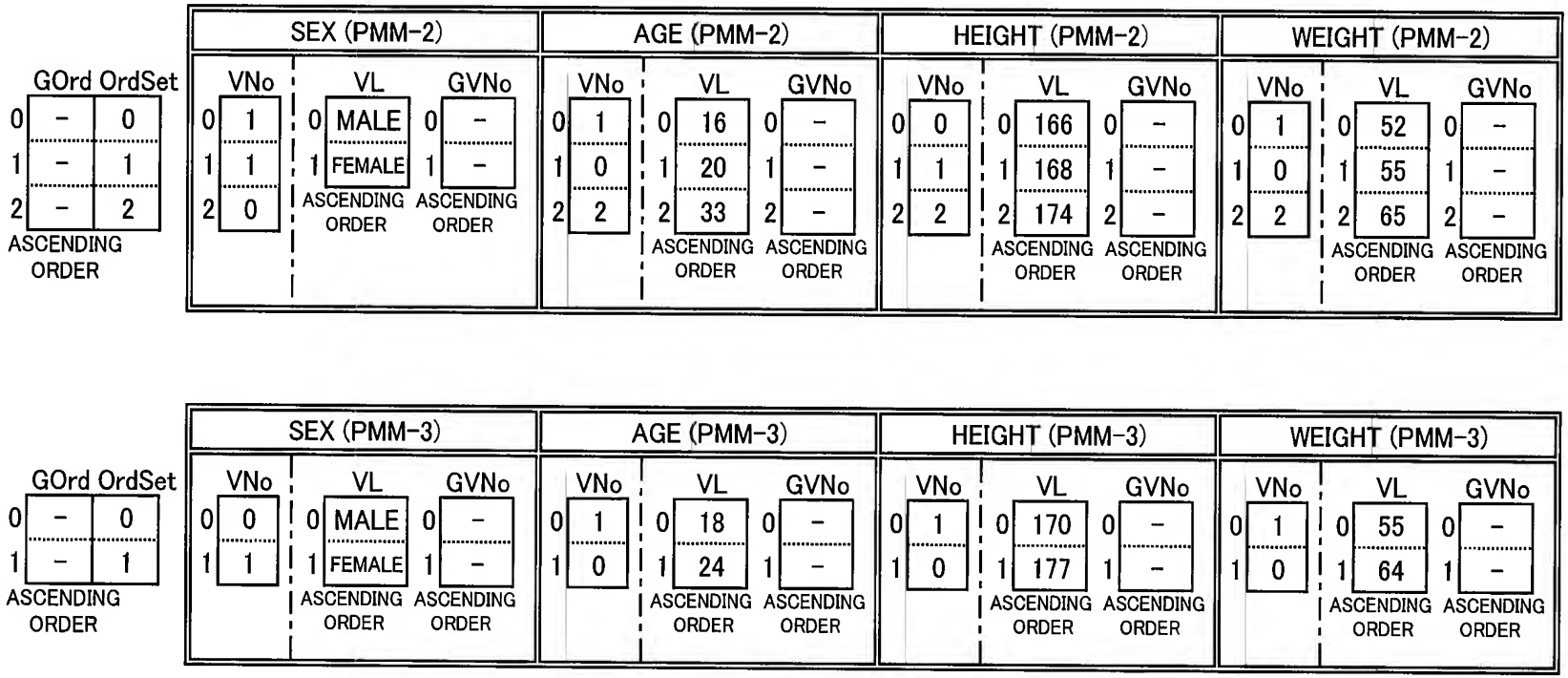

GOrd OrdSet
0 - 0
1 - 1
2 - 2
ASCENDING ORDER
SEX (PMM-2)
VNo
0 1
1 1
2 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo
0 -
1 -
2 -
ASCENDING ORDER
HEIGHT (PMM-2)
VNo
0 0
1 1
2 2
VL
0 166
1 168
2 174
ASCENDING ORDER
GVNo
0 -
1 -
2 -
ASCENDING ORDER
WEIGHT (PMM-2)
VNo
0 1
1 0
2 2
VL
0 52
1 55
2 65
ASCENDING ORDER
GVNo
0 -
1 -
2 -
ASCENDING ORDER
GOrd OrdSet
0 - 0
1 - 1
ASCENDING ORDER
SEX (PMM-3)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
HEIGHT (PMM-3)
VNo
0 1
1 0
VL
0 170
1 177
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER
WEIGHT (PMM-3)
VNo
0 1
1 0
VL
0 55
1 64
ASCENDING ORDER
GVNo
0 -
1 -
ASCENDING ORDER

Fig.8

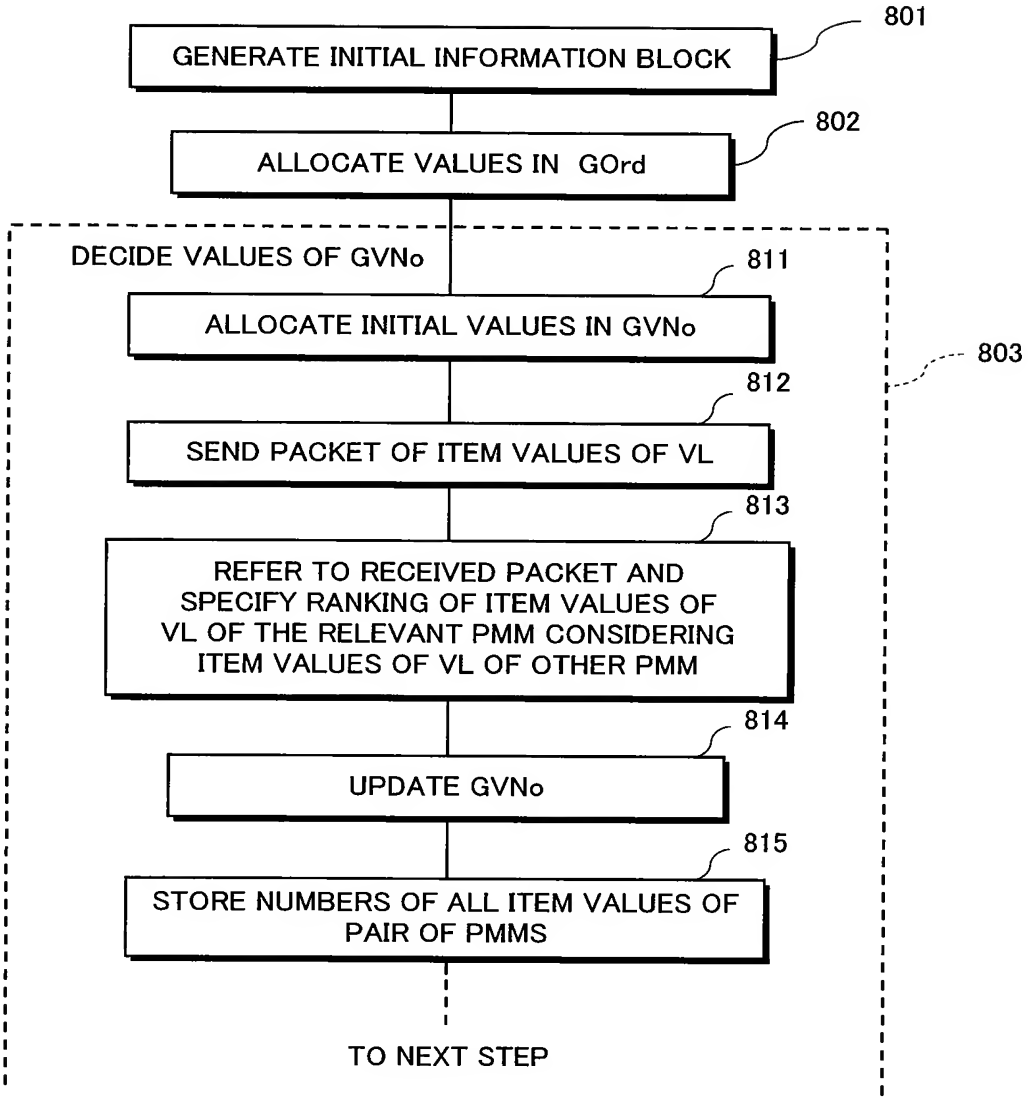

801
GENERATE INITIAL INFORMATION BLOCK
802
ALLOCATE VALUES IN GOrd
DECIDE VALUES OF GVNo
811
ALLOCATE INITIAL VALUES IN GVNo
803
812
SEND PACKET OF ITEM VALUES OF VL
813
REFER TO RECEIVED PACKET AND SPECIFY RANKING OF ITEM VALUES OF VL OF THE RELEVANT PMM CONSIDERING ITEM VALUES OF VL OF OTHER PMM
814
UPDATE GVNo
815
STORE NUMBERS OF ALL ITEM VALUES OF PAIR OF PMMS
TO NEXT STEP

Fig.9

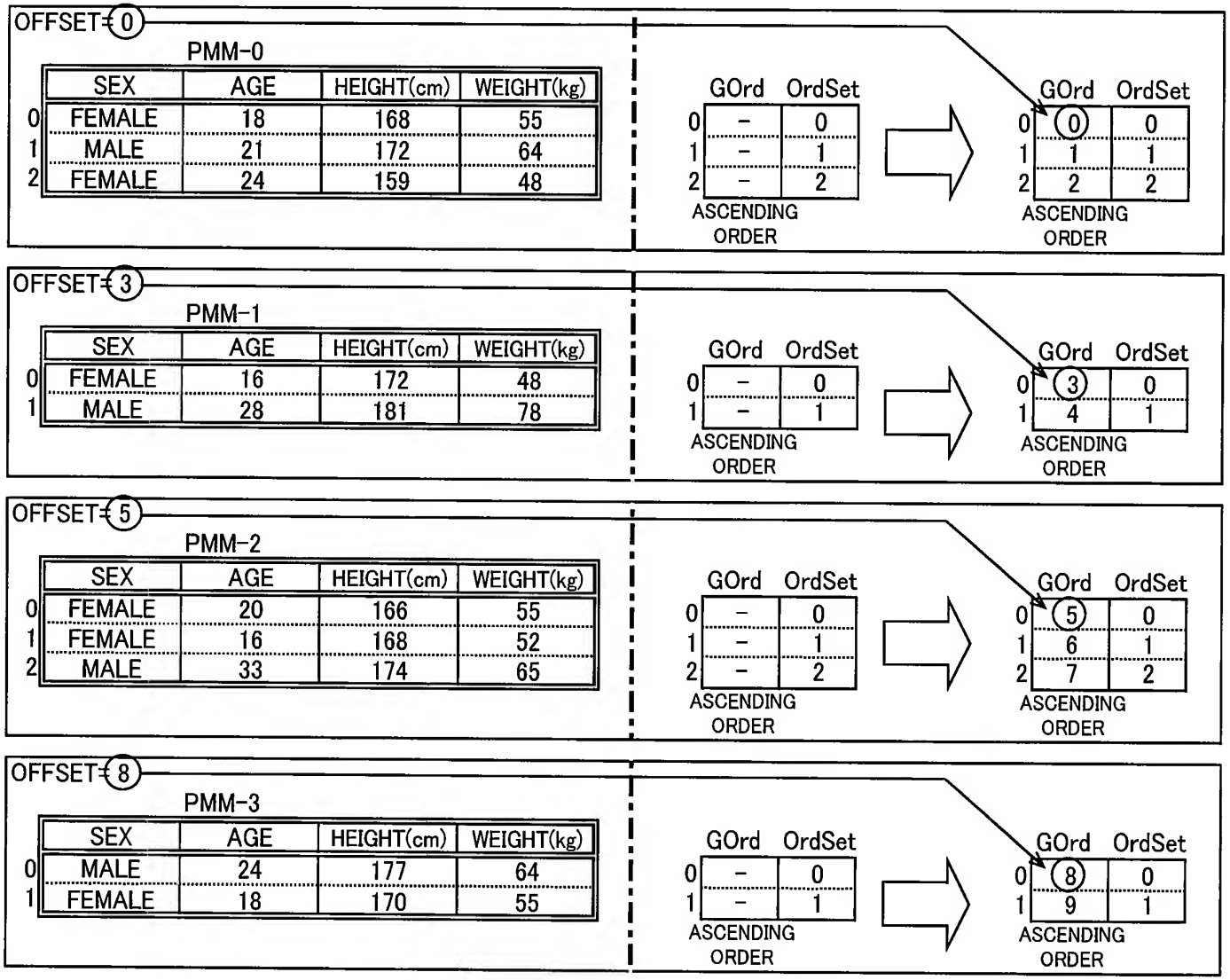

OFFSET=0
PMM-0
SEX AGE HEIGHT(cm) WEIGHT(kg)
0 FEMALE 18 168 55
1 MALE 21 172 64
2 FEMALE 24 159 48
GOrd OrdSet
0 - 0
1 - 1
2 - 2
ASCENDING ORDER
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
OFFSET=3
PMM-1
SEX AGE HEIGHT(cm) WEIGHT(kg)
0 FEMALE 16 172 48
1 MALE 28 181 78
GOrd OrdSet
0 - 0
1 - 1
ASCENDING ORDER
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
OFFSET=5
PMM-2
SEX AGE HEIGHT(cm) WEIGHT(kg)
0 FEMALE 20 166 55
1 FEMALE 16 168 52
2 MALE 33 174 65
GOrd OrdSet
0 - 0
1 - 1
2 - 2
ASCENDING ORDER
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
OFFSET=8
PMM-3
SEX AGE HEIGHT(cm) WEIGHT(kg)
0 MALE 24 177 64
1 FEMALE 18 170 55
GOrd OrdSet
0 - 0
1 - 1
ASCENDING ORDER
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER

Fig.10

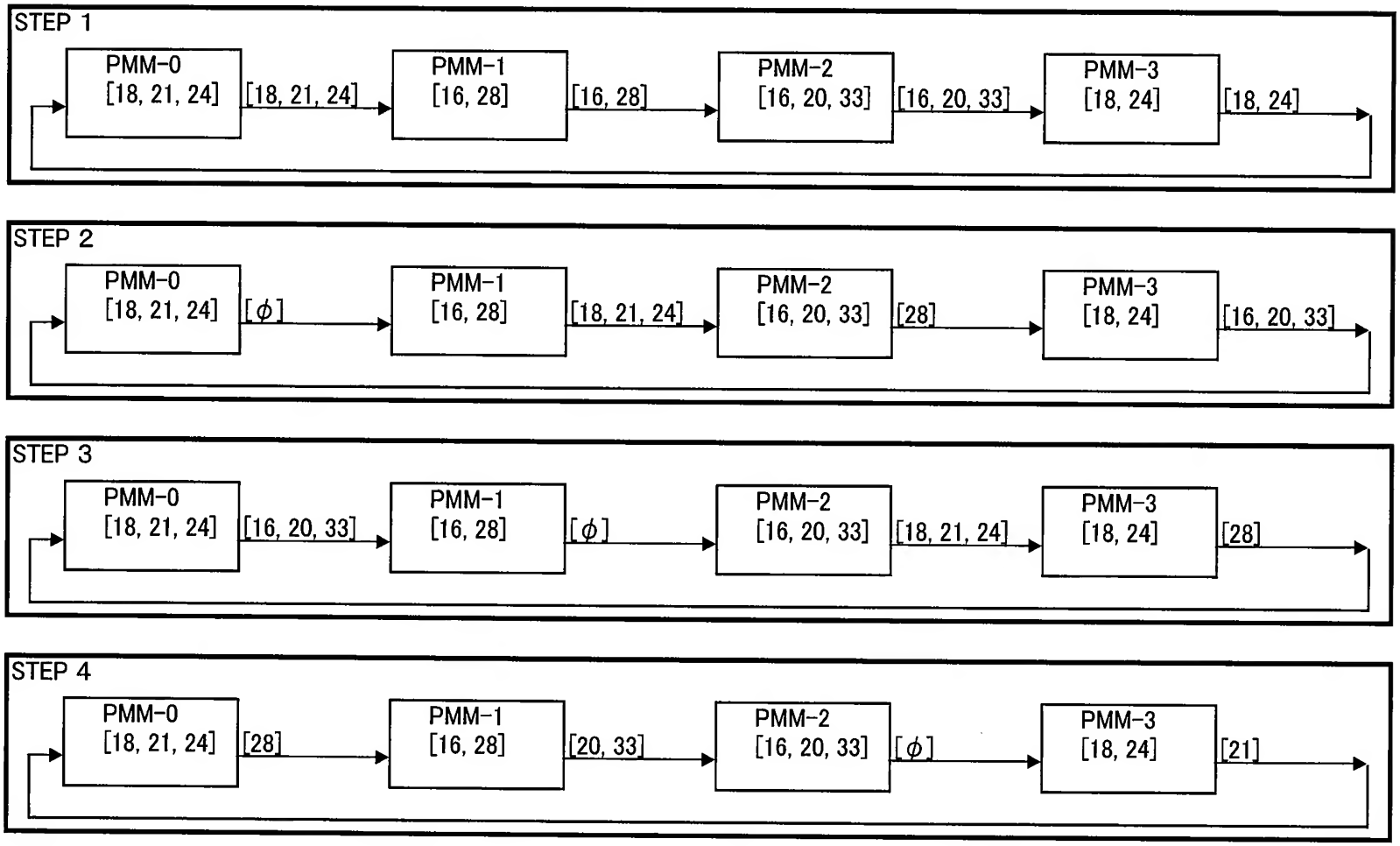

STEP 1
PMM-0
[18, 21, 24]
[18, 21, 24]
PMM-1
[16, 28]
[16, 28]
PMM-2
[16, 20, 33]
[16, 20, 33]
PMM-3
[18, 24]
[18, 24]
STEP 2
PMM-0
[18, 21, 24]
[ϕ]
PMM-1
[16, 28]
[18, 21, 24]
PMM-2
[16, 20, 33]
[28]
PMM-3
[18, 24]
[16, 20, 33]
STEP 3
PMM-0
[18, 21, 24]
[16, 20, 33]
PMM-1
[16, 28]
[ϕ]
PMM-2
[16, 20, 33]
[18, 21, 24]
PMM-3
[18, 24]
[28]
STEP 4
PMM-0
[18, 21, 24]
[28]
PMM-1
[16, 28]
[20, 33]
PMM-2
[16, 20, 33]
[ϕ]
PMM-3
[18, 24]
[21]

Fig.11

STEP 1

RECEIVED LIST			
PMM-0 [18, 24](ASCENDING ORDER)	PMM-1 [18, 21, 24](ASCENDING ORDER)	PMM-2 [16, 28](ASCENDING ORDER)	PMM-3 [16, 20, 33](ASCENDING ORDER)

STEP 2

RECEIVED LIST			
PMM-0 [18, 24](ASCENDING ORDER) [16, 20, 33](ASCENDING ORDER)	PMM-1 [18, 21, 24](ASCENDING ORDER) [ϕ](ASCENDING ORDER)	PMM-2 [16, 28](ASCENDING ORDER) [18, 21, 24](ASCENDING ORDER)	PMM-3 [16, 20, 33](ASCENDING ORDER) [28](ASCENDING ORDER)

STEP 3

RECEIVED LIST			
PMM-0 [18, 24](ASCENDING ORDER) [16, 20, 33](ASCENDING ORDER) [28](ASCENDING ORDER)	PMM-1 [18, 21, 24](ASCENDING ORDER) [ϕ](ASCENDING ORDER) [16, 20, 33](ASCENDING ORDER)	PMM-2 [16, 28](ASCENDING ORDER) [18, 21, 24](ASCENDING ORDER) [ϕ](ASCENDING ORDER)	PMM-3 [16, 20, 33](ASCENDING ORDER) [28](ASCENDING ORDER) [18, 21, 24](ASCENDING ORDER)

STEP 4

RECEIVED LIST			
PMM-0 [18, 24](ASCENDING ORDER) [16, 20, 33](ASCENDING ORDER) [28](ASCENDING ORDER) [21](ASCENDING ORDER)	PMM-1 [18, 21, 24](ASCENDING ORDER) [ϕ](ASCENDING ORDER) [16, 20, 33](ASCENDING ORDER) [28](ASCENDING ORDER)	PMM-2 [16, 28](ASCENDING ORDER) [18, 21, 24](ASCENDING ORDER) [ϕ](ASCENDING ORDER) [20, 33](ASCENDING ORDER)	PMM-3 [16, 20, 33](ASCENDING ORDER) [28](ASCENDING ORDER) [18, 21, 24](ASCENDING ORDER) [ϕ](ASCENDING ORDER)

Fig.12

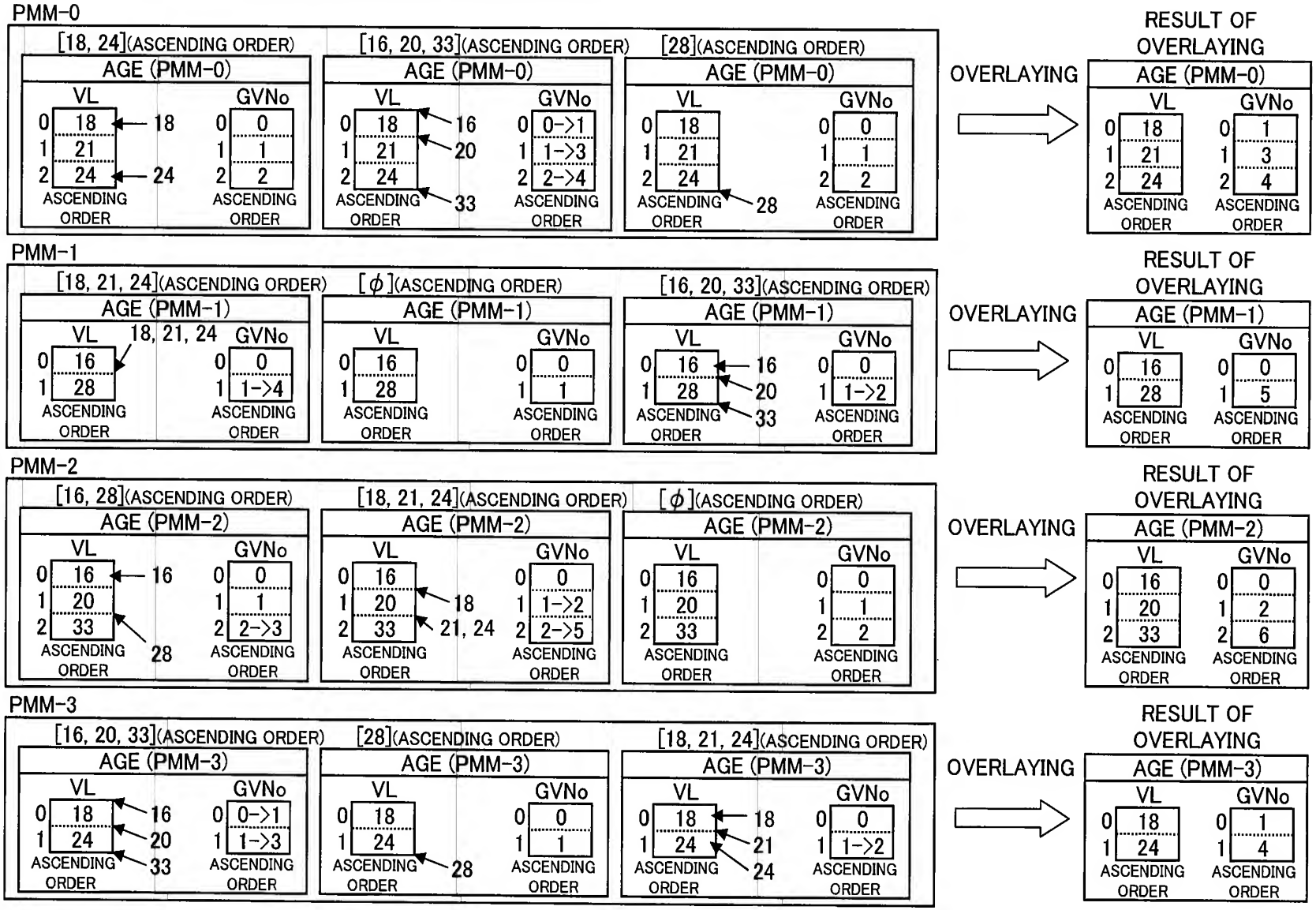

PMM-0
[18, 24](ASCENDING ORDER)
AGE (PMM-0)
VL
GVNo
0 18 ← 18
1 21
2 24 ← 24
ASCENDING ORDER
0 0
1 1
2 2
[16, 20, 33](ASCENDING ORDER)
AGE (PMM-0)
0 18 ← 16
1 21 ← 20
2 24 ← 33
0 0->1
1 1->3
2 2->4
[28](ASCENDING ORDER)
AGE (PMM-0)
0 18
1 21
2 24 ← 28
0 0
1 1
2 2
OVERLAYING
RESULT OF OVERLAYING
AGE (PMM-0)
0 18
1 21
2 24
0 1
1 3
2 4
PMM-1
[18, 21, 24](ASCENDING ORDER)
AGE (PMM-1)
VL
GVNo
0 16 ← 18, 21, 24
1 28
0 0
1 1->4
[ϕ](ASCENDING ORDER)
AGE (PMM-1)
0 16
1 28
0 0
1 1
[16, 20, 33](ASCENDING ORDER)
AGE (PMM-1)
0 16 ← 16
1 28 ← 20
33
0 0
1 1->2
OVERLAYING
RESULT OF OVERLAYING
AGE (PMM-1)
0 16
1 28
0 0
1 5
PMM-2
[16, 28](ASCENDING ORDER)
AGE (PMM-2)
VL
GVNo
0 16 ← 16
1 20
2 33 ← 28
0 0
1 1
2 2->3
[18, 21, 24](ASCENDING ORDER)
AGE (PMM-2)
0 16 ← 18
1 20
2 33 ← 21, 24
0 0
1 1->2
2 2->5
[ϕ](ASCENDING ORDER)
AGE (PMM-2)
0 16
1 20
2 33
0 0
1 1
2 2
OVERLAYING
RESULT OF OVERLAYING
AGE (PMM-2)
0 16
1 20
2 33
0 0
1 2
2 6
PMM-3
[16, 20, 33](ASCENDING ORDER)
AGE (PMM-3)
VL
GVNo
0 18 ← 16
1 24 ← 20
33
0 0->1
1 1->3
[28](ASCENDING ORDER)
AGE (PMM-3)
0 18
1 24 ← 28
0 0
1 1
[18, 21, 24](ASCENDING ORDER)
AGE (PMM-3)
0 18 ← 18
1 24 ← 21
24
0 0
1 1->2
OVERLAYING
RESULT OF OVERLAYING
AGE (PMM-3)
0 18
1 24
0 1
1 4

Fig.13A

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48
3	FEMALE	16	172	48
4	MALE	28	181	78
5	FEMALE	20	166	55
6	FEMALE	16	168	52
7	MALE	33	174	65
8	MALE	24	177	64
9	FEMALE	18	170	55

Fig.13B

	OrdSet
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

SEX				AGE				HEIGHT				WEIGHT			
	VNo		VL		VNo		VL		VNo		VL		VNo		VL
0	1	0	MALE	0	1	0	16	0	2	0	159	0	2	0	48
1	0	1	FEMALE	1	3	1	18	1	4	1	166	1	3	1	52
2	1		ASCENDING ORDER	2	4	2	20	2	0	2	168	2	0	2	55
3	1			3	0	3	21	3	4	3	170	3	0	3	64
4	0			4	5	4	24	4	7	4	172	4	5	4	65
5	1			5	2	5	28	5	1	5	174	5	2	5	78
6	1			6	0	6	33	6	2	6	177	6	1		ASCENDING ORDER
7	0			7	6		ASCENDING ORDER	7	5	7	181	7	4		
8	0			8	4			8	6		ASCENDING ORDER	8	3		
9	1			9	1			9	3			9	2		

Fig.14

OFFSET= 0

PMM-0

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48

OFFSET= 3

PMM-1

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	16	172	48
1	MALE	28	181	78

OFFSET= 5

PMM-2

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	20	166	55
1	FEMALE	16	168	52
2	MALE	33	174	65

OFFSET= 8

PMM-3

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	MALE	24	177	64
1	FEMALE	18	170	55

Fig.15

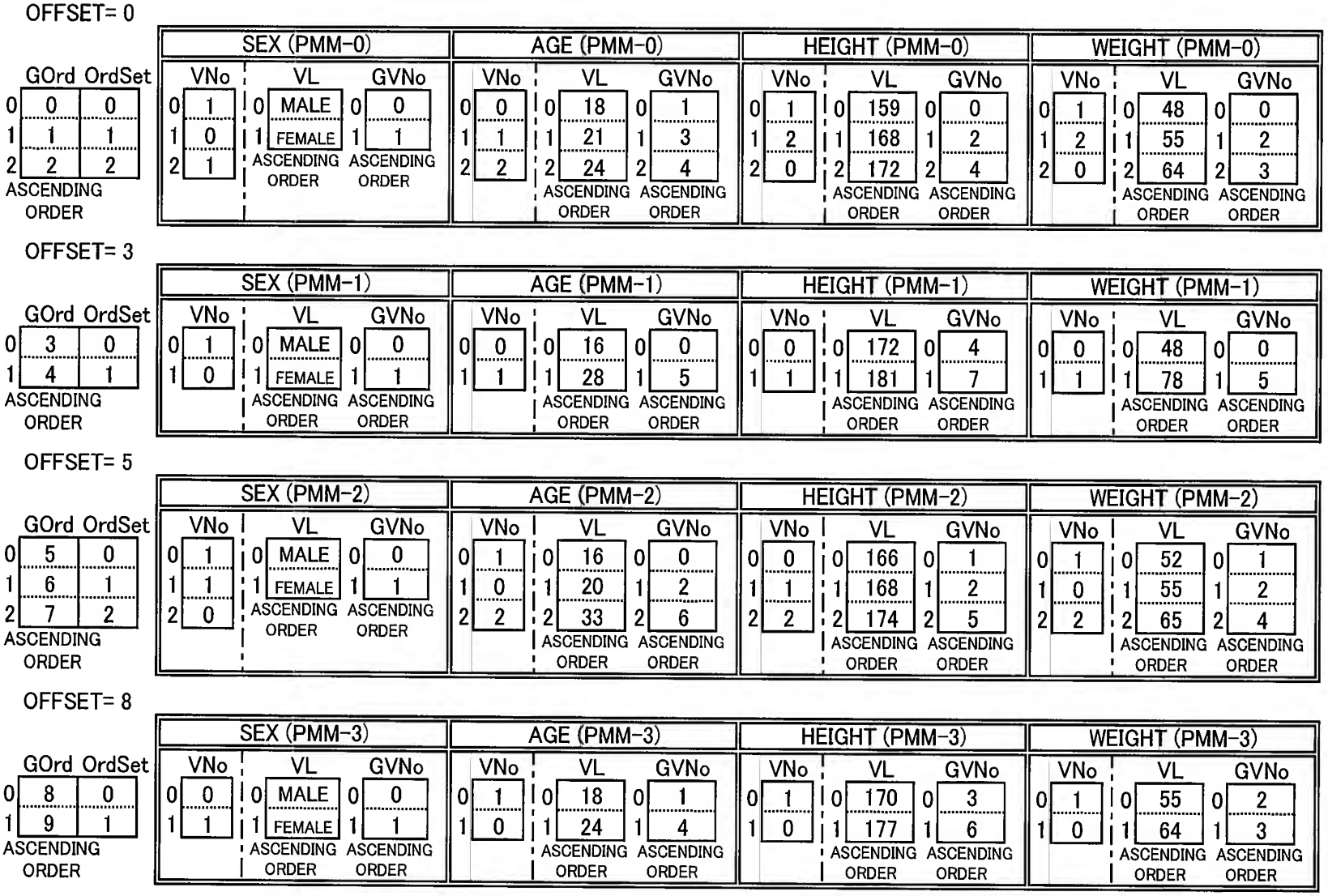

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SEX (PMM-0)
VNo
0 1
1 0
2 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo
0 1
1 3
2 4
ASCENDING ORDER
HEIGHT (PMM-0)
VNo
0 1
1 2
2 0
VL
0 159
1 168
2 172
ASCENDING ORDER
GVNo
0 0
1 2
2 4
ASCENDING ORDER
WEIGHT (PMM-0)
VNo
0 1
1 2
2 0
VL
0 48
1 55
2 64
ASCENDING ORDER
GVNo
0 0
1 2
2 3
ASCENDING ORDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SEX (PMM-1)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
HEIGHT (PMM-1)
VNo
0 0
1 1
VL
0 172
1 181
ASCENDING ORDER
GVNo
0 4
1 7
ASCENDING ORDER
WEIGHT (PMM-1)
VNo
0 0
1 1
VL
0 48
1 78
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SEX (PMM-2)
VNo
0 1
1 1
2 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo
0 0
1 2
2 6
ASCENDING ORDER
HEIGHT (PMM-2)
VNo
0 0
1 1
2 2
VL
0 166
1 168
2 174
ASCENDING ORDER
GVNo
0 1
1 2
2 5
ASCENDING ORDER
WEIGHT (PMM-2)
VNo
0 1
1 0
2 2
VL
0 52
1 55
2 65
ASCENDING ORDER
GVNo
0 1
1 2
2 4
ASCENDING ORDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SEX (PMM-3)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
HEIGHT (PMM-3)
VNo
0 1
1 0
VL
0 170
1 177
ASCENDING ORDER
GVNo
0 3
1 6
ASCENDING ORDER
WEIGHT (PMM-3)
VNo
0 1
1 0
VL
0 55
1 64
ASCENDING ORDER
GVNo
0 2
1 3
ASCENDING ORDER

Fig.16A

	E AGE	EVENT
0	18	H2
1	18	C1
2	20	A
3	22	C2
4	22	P1
5	27	P2
6	33	M

Fig.16B

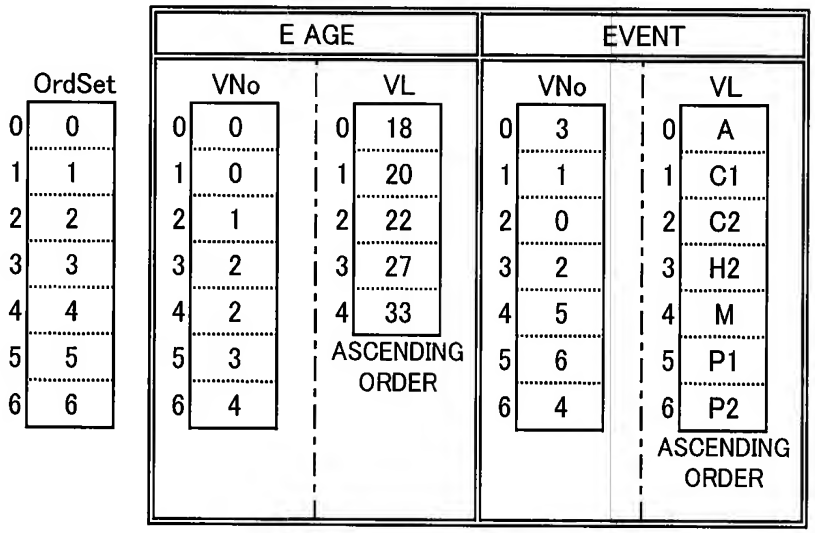


Fig.17

PMM-0 OFFSET = 0

	E AGE	EVENT
0	18	H2
1	18	C1

PMM-1 OFFSET = 2

	E AGE	EVENT
0	20	A
1	22	C2

PMM-2 OFFSET = 4

	E AGE	EVENT
0	22	P1
1	27	P2

PMM-3 OFFSET = 6

	E AGE	EVENT
0	33	M

Fig.18

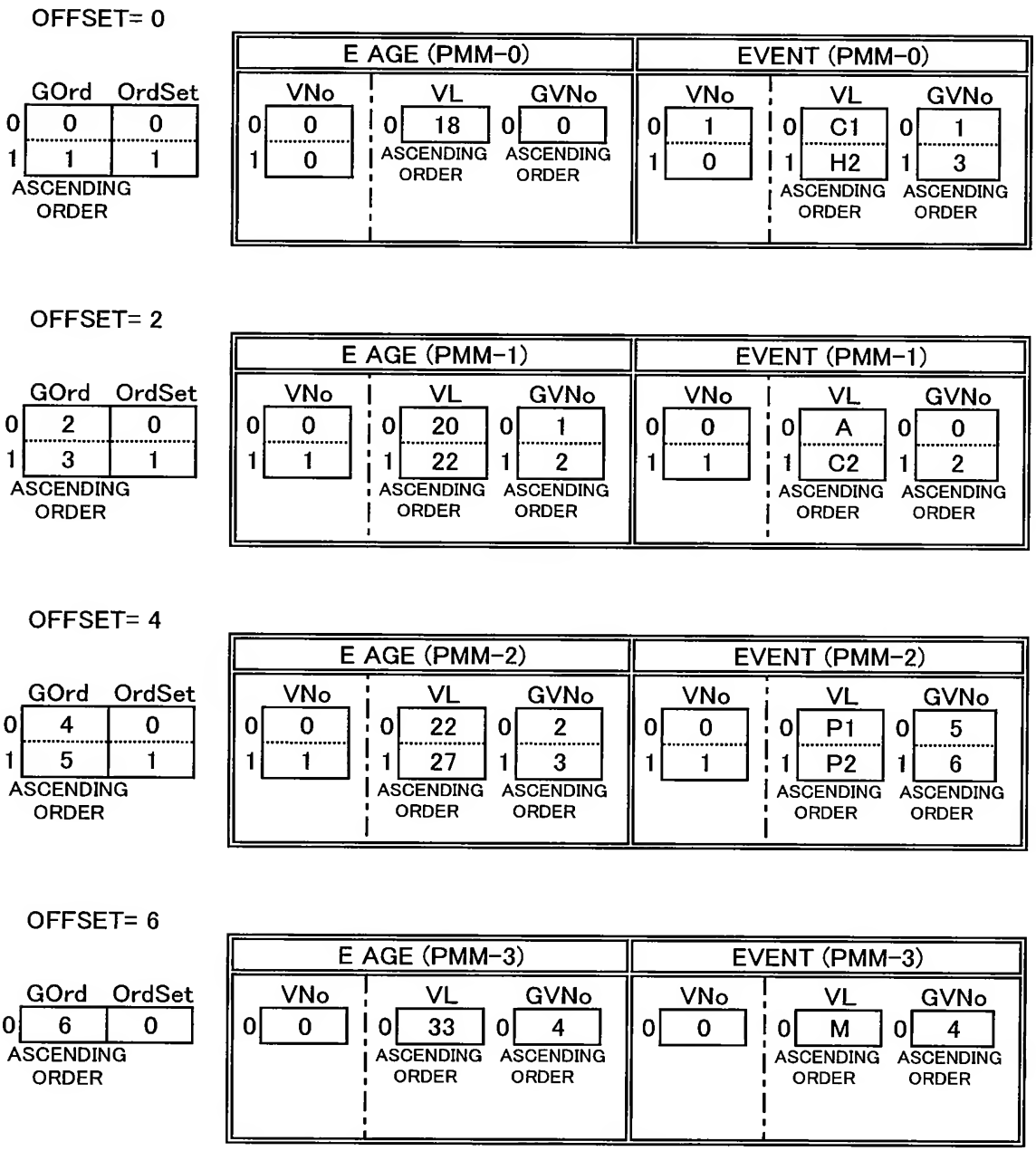

OFFSET= 0
GOrd
OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo
0 0
ASCENDING ORDER
EVENT (PMM-0)
VNo
0 1
1 0
VL
0 C1
1 H2
ASCENDING ORDER
GVNo
0 1
1 3
ASCENDING ORDER
OFFSET= 2
GOrd
OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo
0 1
1 2
ASCENDING ORDER
EVENT (PMM-1)
VNo
0 0
1 1
VL
0 A
1 C2
ASCENDING ORDER
GVNo
0 0
1 2
ASCENDING ORDER
OFFSET= 4
GOrd
OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo
0 2
1 3
ASCENDING ORDER
EVENT (PMM-2)
VNo
0 0
1 1
VL
0 P1
1 P2
ASCENDING ORDER
GVNo
0 5
1 6
ASCENDING ORDER
OFFSET= 6
GOrd
OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo
0 4
ASCENDING ORDER
EVENT (PMM-3)
VNo
0 0
VL
0 M
ASCENDING ORDER
GVNo
0 4
ASCENDING ORDER

Fig.19

TABLE 1

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48
3	FEMALE	16	172	48
4	MALE	28	181	78
5	FEMALE	20	166	55
6	FEMALE	16	168	52
7	MALE	33	174	65
8	MALE	24	177	64
9	FEMALE	18	170	55

INTERNAL JOIN

TABLE 2

	E AGE	EVENT
0	18	H2
1	18	C1
2	20	A
3	22	C2
4	22	P1
5	27	P2
6	33	M

GENERATED JOIN TABLE

		SEX	AGE	HEIGHT(cm)	WEIGHT(kg)		E AGE	EVENT
0	0	FEMALE	18	168	55	0	18	H2
1	0	FEMALE	18	168	55	1	18	C1
2	5	FEMALE	20	166	55	2	20	A
3	7	MALE	33	174	65	6	33	M
4	9	FEMALE	18	170	55	0	18	H2
5	9	FEMALE	18	170	55	1	18	C1

Fig.20

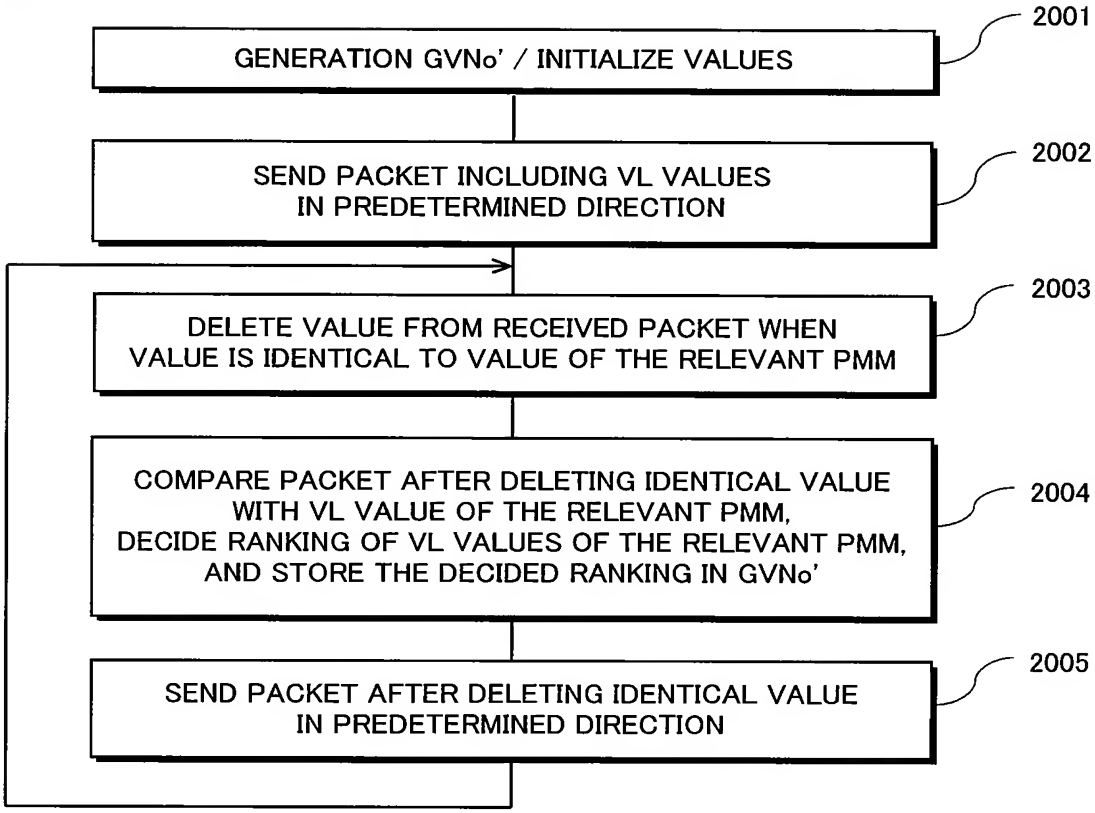

GENERATION GVNo' / INITIALIZE VALUES
2001
SEND PACKET INCLUDING VL VALUES IN PREDETERMINED DIRECTION
2002
DELETE VALUE FROM RECEIVED PACKET WHEN VALUE IS IDENTICAL TO VALUE OF THE RELEVANT PMM
2003
COMPARE PACKET AFTER DELETING IDENTICAL VALUE WITH VL VALUE OF THE RELEVANT PMM, DECIDE RANKING OF VL VALUES OF THE RELEVANT PMM, AND STORE THE DECIDED RANKING IN GVNo'
2004
SEND PACKET AFTER DELETING IDENTICAL VALUE IN PREDETERMINED DIRECTION
2005

Fig.21

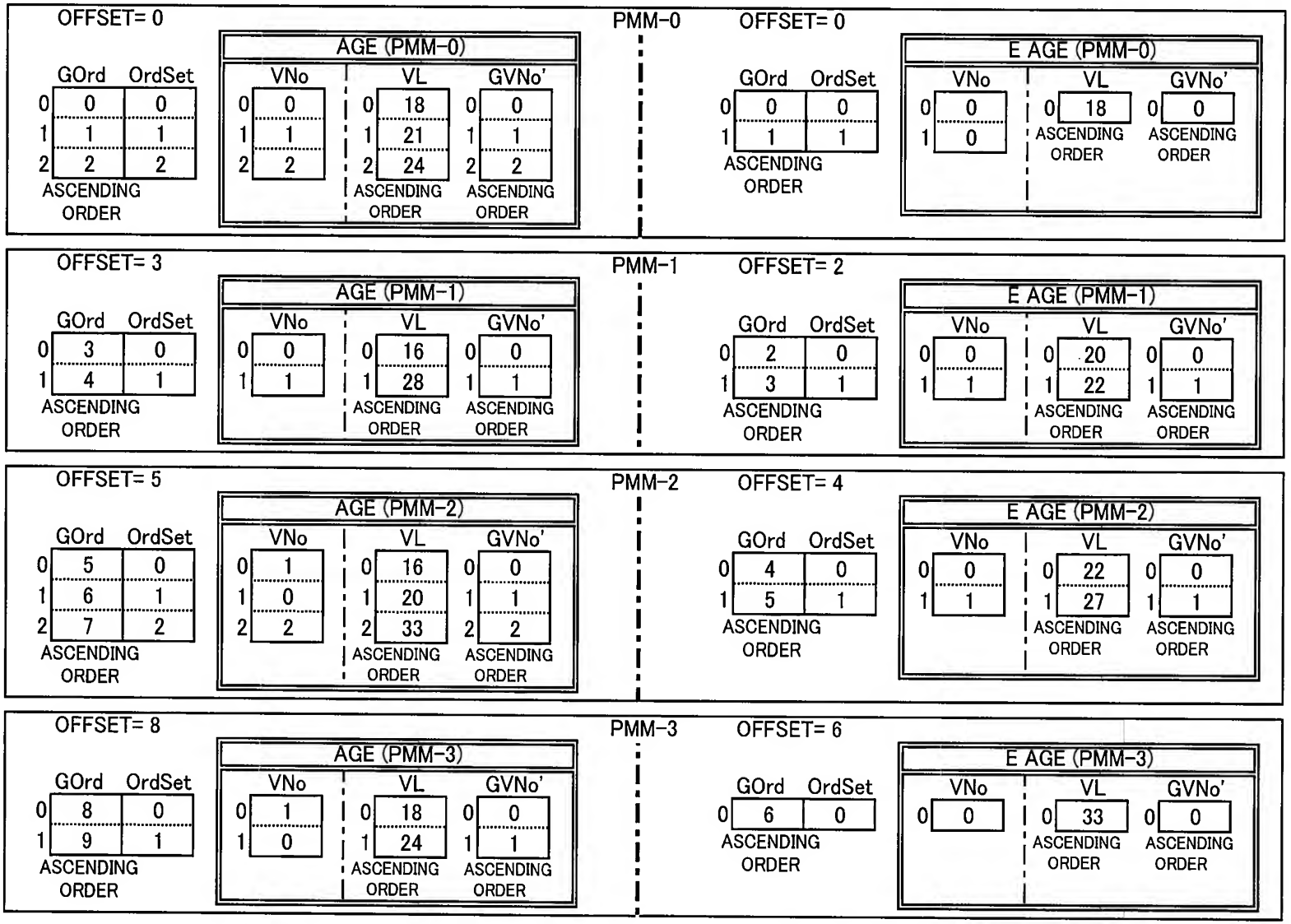

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo VL GVNo'
0 0 0 18 0 0
1 1 1 21 1 1
2 2 2 24 2 2
ASCENDING ORDER
ASCENDING ORDER
PMM-0
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo VL GVNo'
0 0 0 18 0 0
1 0
ASCENDING ORDER
ASCENDING ORDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo VL GVNo'
0 0 0 16 0 0
1 1 1 28 1 1
ASCENDING ORDER
ASCENDING ORDER
PMM-1
OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo VL GVNo'
0 0 0 20 0 0
1 1 1 22 1 1
ASCENDING ORDER
ASCENDING ORDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo VL GVNo'
0 1 0 16 0 0
1 0 1 20 1 1
2 2 2 33 2 2
ASCENDING ORDER
ASCENDING ORDER
PMM-2
OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo VL GVNo'
0 0 0 22 0 0
1 1 1 27 1 1
ASCENDING ORDER
ASCENDING ORDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo VL GVNo'
0 1 0 18 0 0
1 0 1 24 1 1
ASCENDING ORDER
ASCENDING ORDER
PMM-3
OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo VL GVNo'
0 0 0 33 0 0
ASCENDING ORDER
ASCENDING ORDER

Fig.22

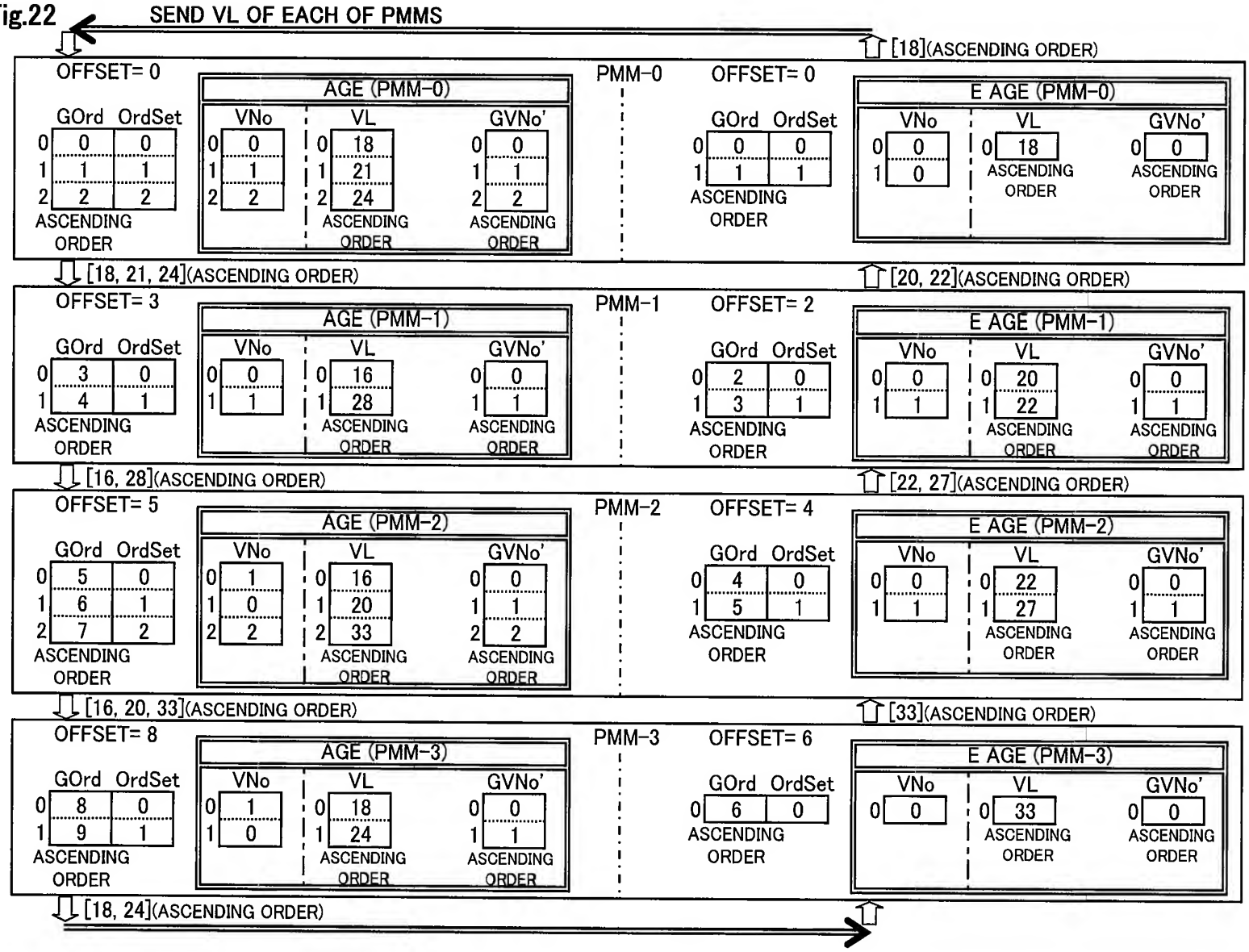

SEND VL OF EACH OF PMMS
[18](ASCENDING ORDER)
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo'
0 0
1 1
2 2
ASCENDING ORDER
PMM-0
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo'
0 0
ASCENDING ORDER
[18, 21, 24](ASCENDING ORDER)
[20, 22](ASCENDING ORDER)
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING ORDER
PMM-1
OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING ORDER
[16, 28](ASCENDING ORDER)
[22, 27](ASCENDING ORDER)
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo'
0 0
1 1
2 2
ASCENDING ORDER
PMM-2
OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING ORDER
[16, 20, 33](ASCENDING ORDER)
[33](ASCENDING ORDER)
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING ORDER
PMM-3
OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo'
0 0
ASCENDING ORDER
[18, 24](ASCENDING ORDER)

Fig.23

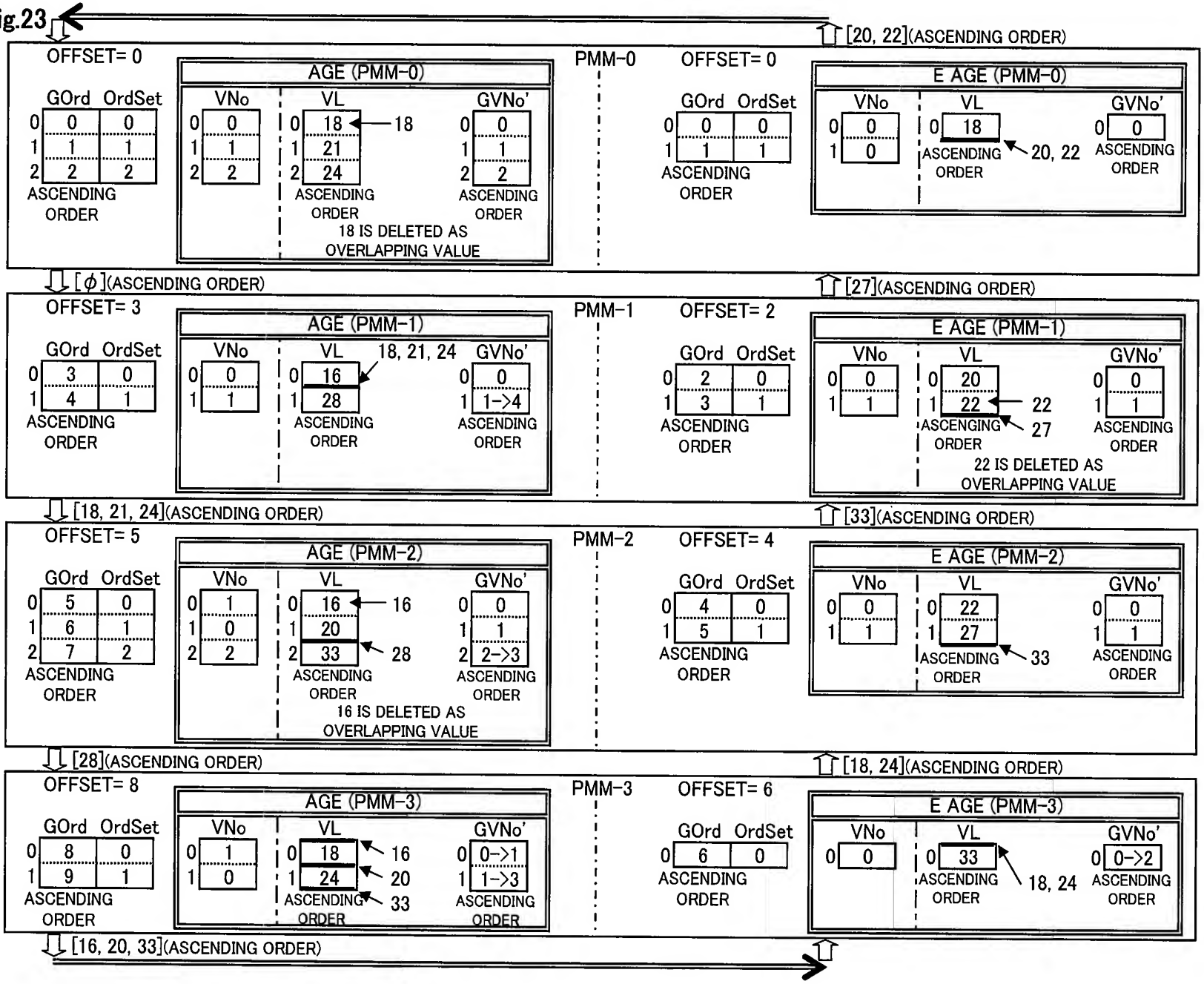

[20, 22](ASCENDING ORDER)
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18 ← 18
1 21
2 24
ASCENDING ORDER
GVNo'
0 0
1 1
2 2
ASCENDING ORDER
18 IS DELETED AS OVERLAPPING VALUE
PMM-0
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
20, 22
GVNo'
0 0
ASCENDING ORDER
[φ](ASCENDING ORDER)
[27](ASCENDING ORDER)
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
18, 21, 24
0 16
1 28
ASCENDING ORDER
GVNo'
0 0
1 1->4
ASCENDING ORDER
PMM-1
OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22 ← 22
27
ASCENGING ORDER
GVNo'
0 0
1 1
ASCENDING ORDER
22 IS DELETED AS OVERLAPPING VALUE
[18, 21, 24](ASCENDING ORDER)
[33](ASCENDING ORDER)
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16 ← 16
1 20
2 33 ← 28
ASCENDING ORDER
GVNo'
0 0
1 1
2 2->3
ASCENDING ORDER
16 IS DELETED AS OVERLAPPING VALUE
PMM-2
OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
33
GVNo'
0 0
1 1
ASCENDING ORDER
[28](ASCENDING ORDER)
[18, 24](ASCENDING ORDER)
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18 ← 16
1 24 ← 20
ASCENDING ORDER
33
GVNo'
0 0->1
1 1->3
ASCENDING ORDER
PMM-3
OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
18, 24
GVNo'
0 0->2
ASCENDING ORDER
[16, 20, 33](ASCENDING ORDER)

Fig.24

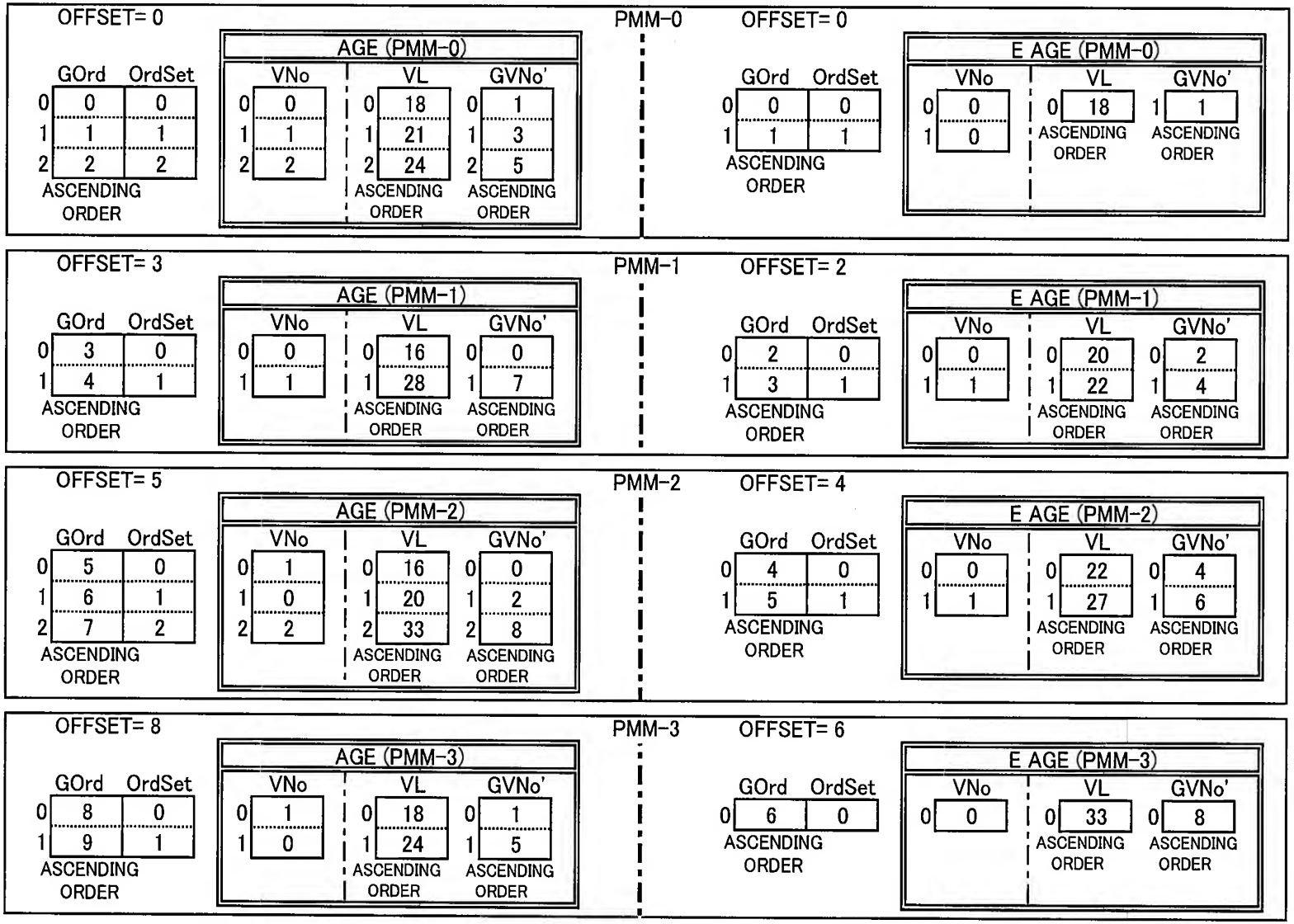

OFFSET= 0
PMM-0
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo'
0 1
1 3
2 5
ASCENDING ORDER
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo'
1 1
ASCENDING ORDER
OFFSET= 3
PMM-1
OFFSET= 2
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo'
0 0
1 7
ASCENDING ORDER
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo'
0 2
1 4
ASCENDING ORDER
OFFSET= 5
PMM-2
OFFSET= 4
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo'
0 0
1 2
2 8
ASCENDING ORDER
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo'
0 4
1 6
ASCENDING ORDER
OFFSET= 8
PMM-3
OFFSET= 6
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo'
0 1
1 5
ASCENDING ORDER
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo'
0 8
ASCENDING ORDER

Fig.25

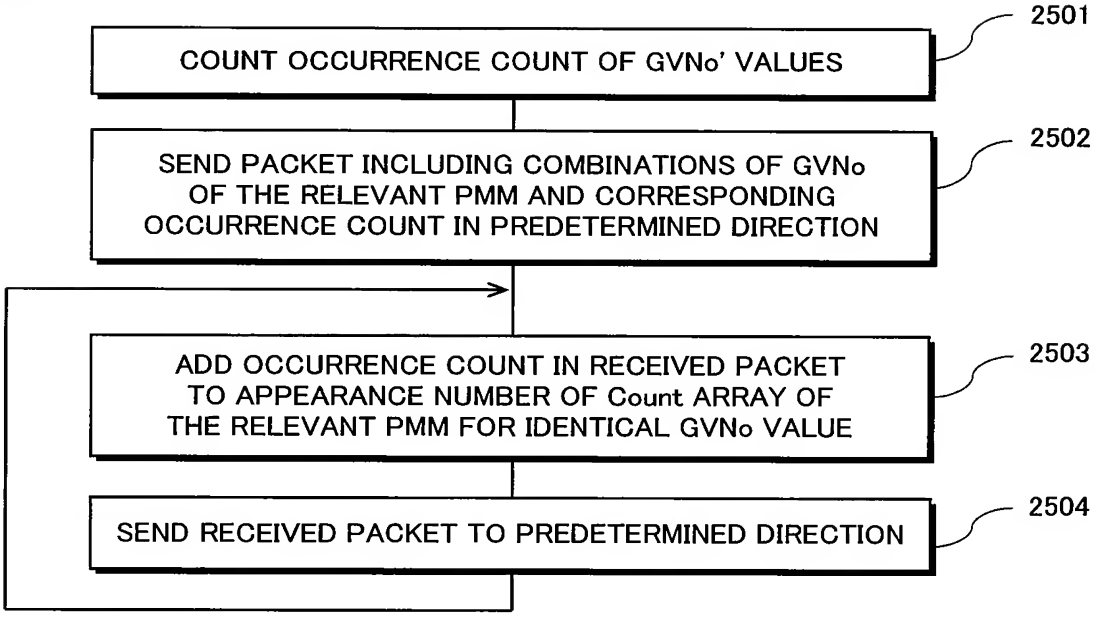

COUNT OCCURRENCE COUNT OF GVNo' VALUES
2501
SEND PACKET INCLUDING COMBINATIONS OF GVNo OF THE RELEVANT PMM AND CORRESPONDING OCCURRENCE COUNT IN PREDETERMINED DIRECTION
2502
ADD OCCURRENCE COUNT IN RECEIVED PACKET TO APPEARANCE NUMBER OF Count ARRAY OF THE RELEVANT PMM FOR IDENTICAL GVNo VALUE
2503
SEND RECEIVED PACKET TO PREDETERMINED DIRECTION
2504

Fig.26

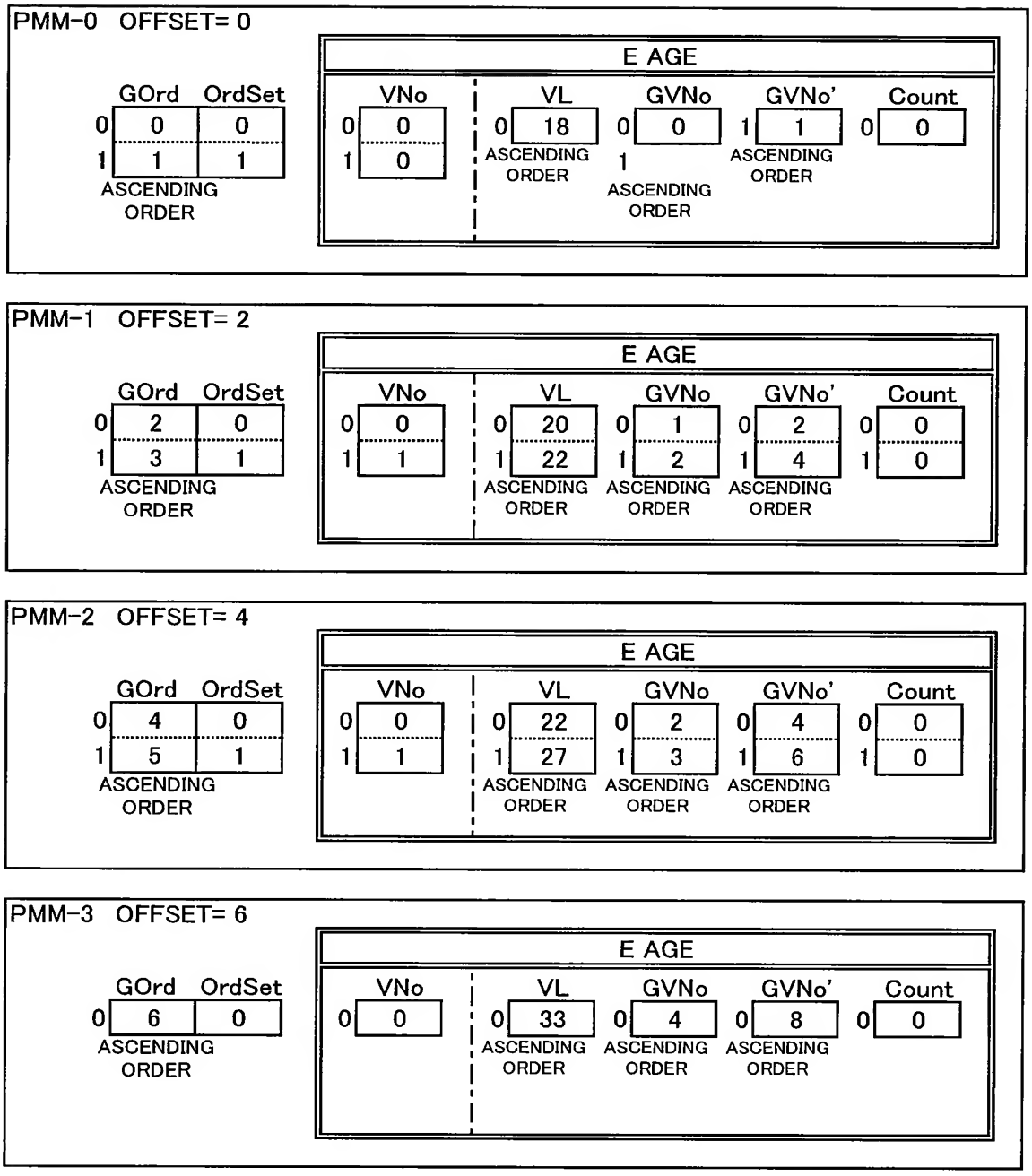

PMM-0 OFFSET= 0
GOrd
OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo
0 0
1
ASCENDING ORDER
GVNo'
1 1
ASCENDING ORDER
Count
0 0
PMM-1 OFFSET= 2
GOrd
OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo
0 1
1 2
ASCENDING ORDER
GVNo'
0 2
1 4
ASCENDING ORDER
Count
0 0
1 0
PMM-2 OFFSET= 4
GOrd
OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo
0 2
1 3
ASCENDING ORDER
GVNo'
0 4
1 6
ASCENDING ORDER
Count
0 0
1 0
PMM-3 OFFSET= 6
GOrd
OrdSet
0 6 0
ASCENDING ORDER
E AGE
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo
0 4
ASCENDING ORDER
GVNo'
0 8
ASCENDING ORDER
Count
0 0

Fig.27

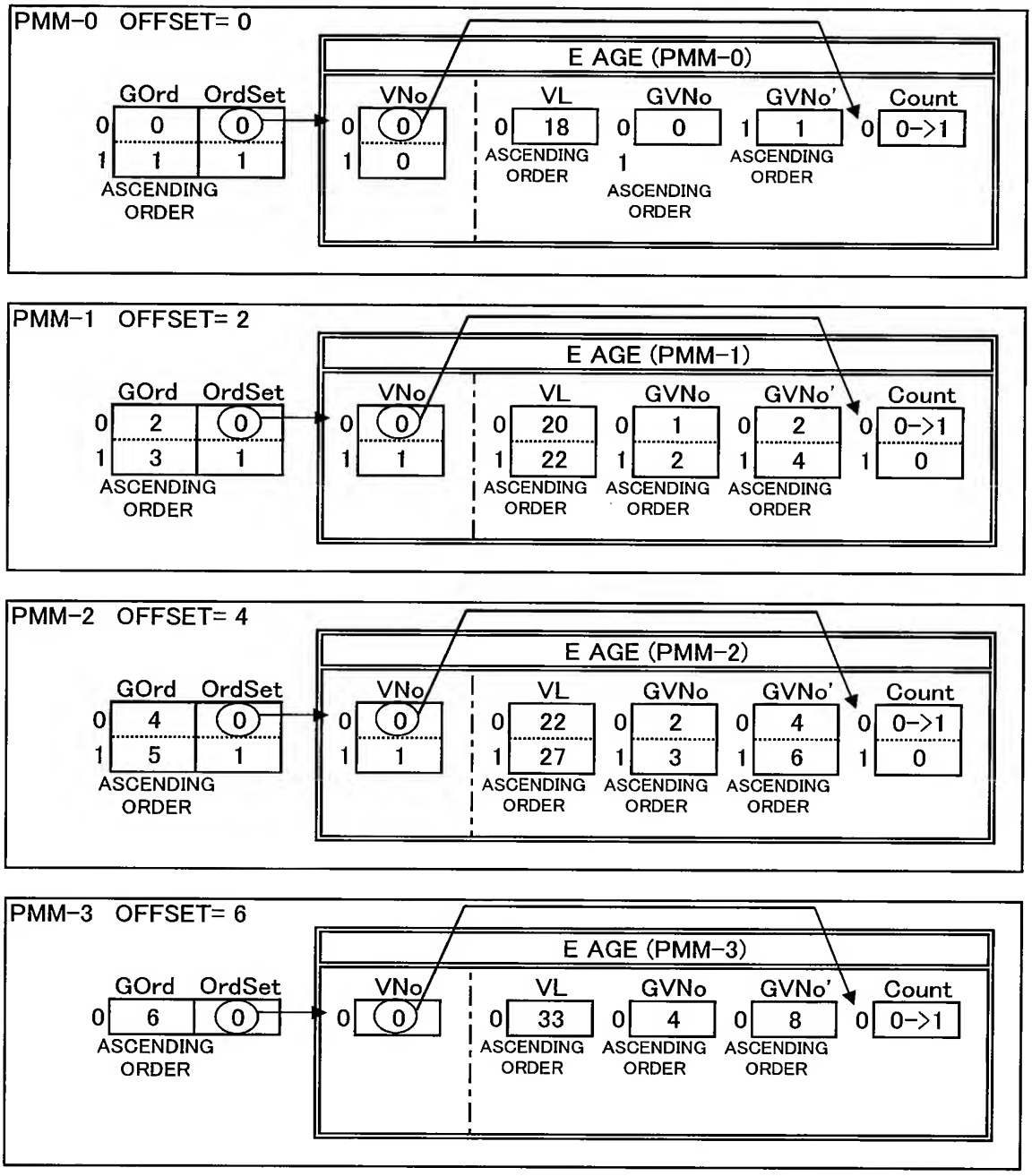

PMM-0 OFFSET= 0
E AGE (PMM-0)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
0 0 0
1 1 1
ASCENDING ORDER
0 0
1 0
0 18
1 22
0 0
1 1
0 1
1 2
0 1
1 4
0 0->1
1 0
PMM-1 OFFSET= 2
E AGE (PMM-1)
PMM-2 OFFSET= 4
E AGE (PMM-2)
PMM-3 OFFSET= 6
E AGE (PMM-3)

Fig.28

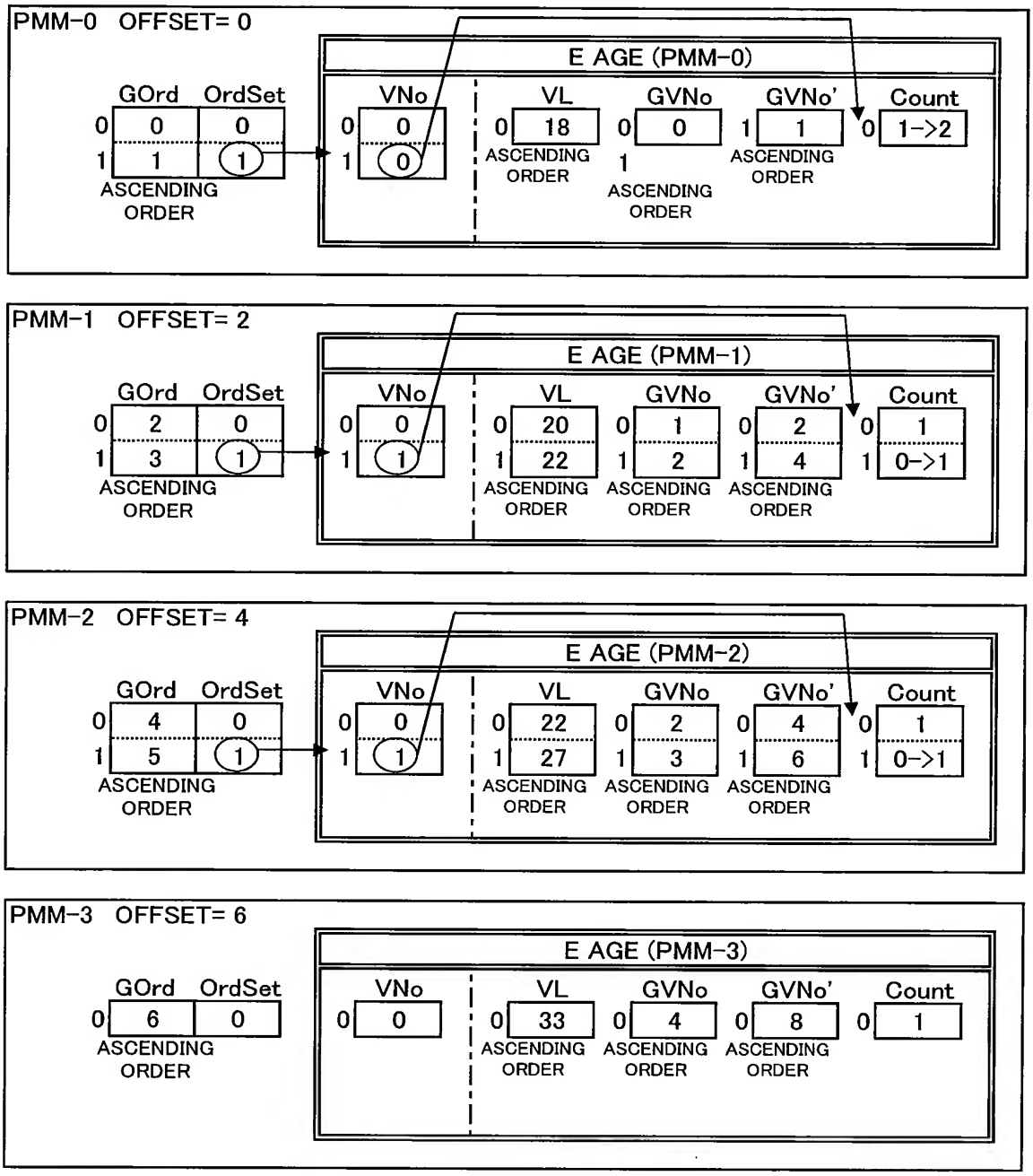

PMM-0 OFFSET= 0
E AGE (PMM-0)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
ASCENDING ORDER
1->2
PMM-1 OFFSET= 2
E AGE (PMM-1)
0->1
PMM-2 OFFSET= 4
E AGE (PMM-2)
0->1
PMM-3 OFFSET= 6
E AGE (PMM-3)

Fig.29A

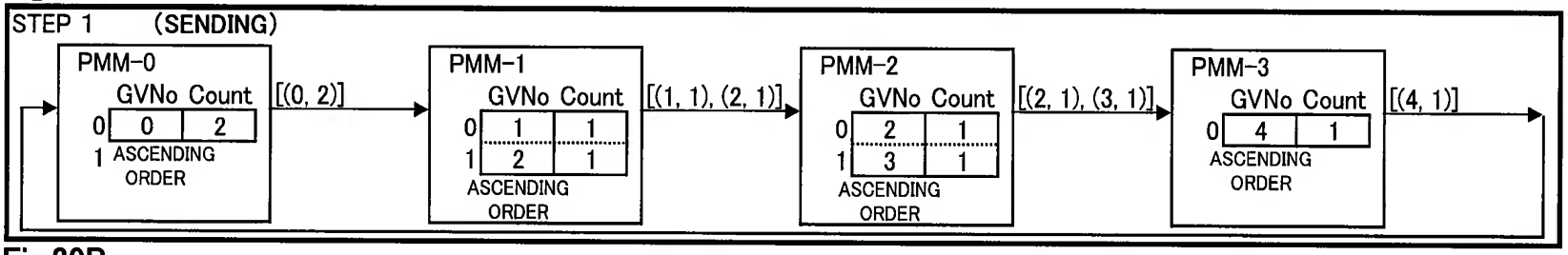


Fig.29B

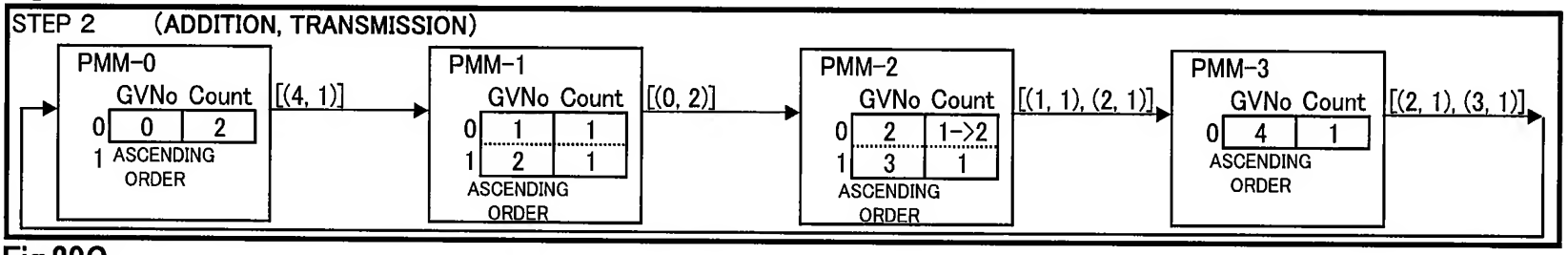


Fig.29C

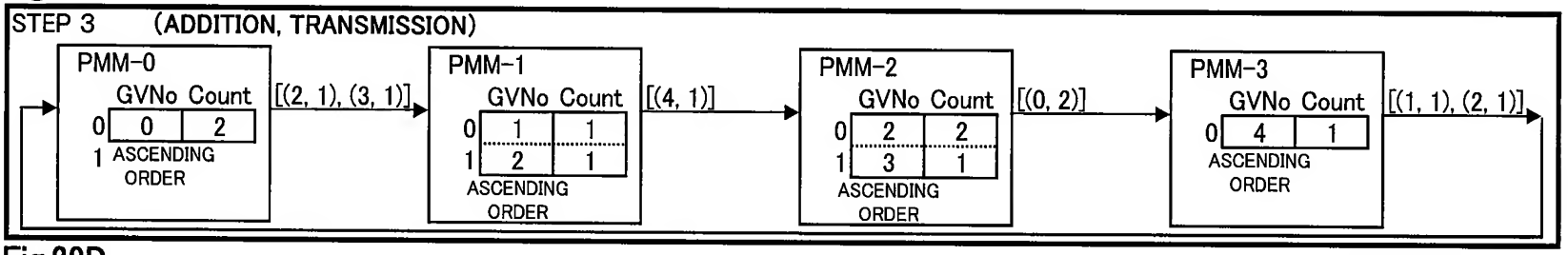


Fig.29D

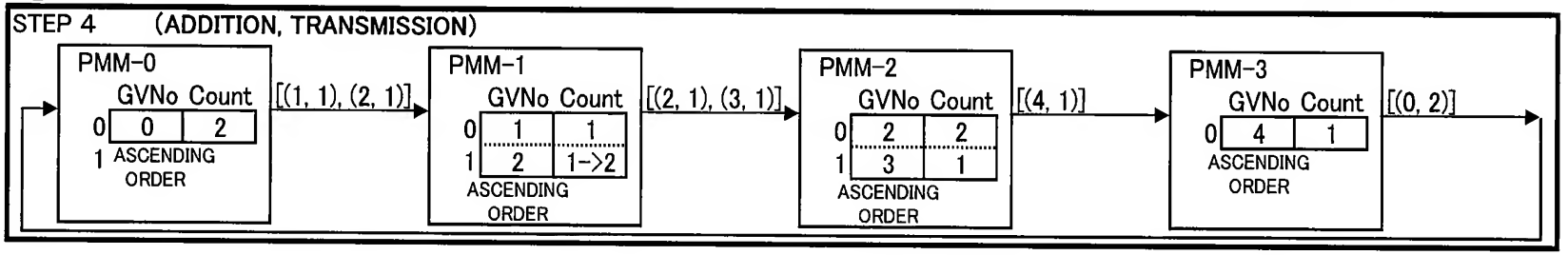


Fig.30

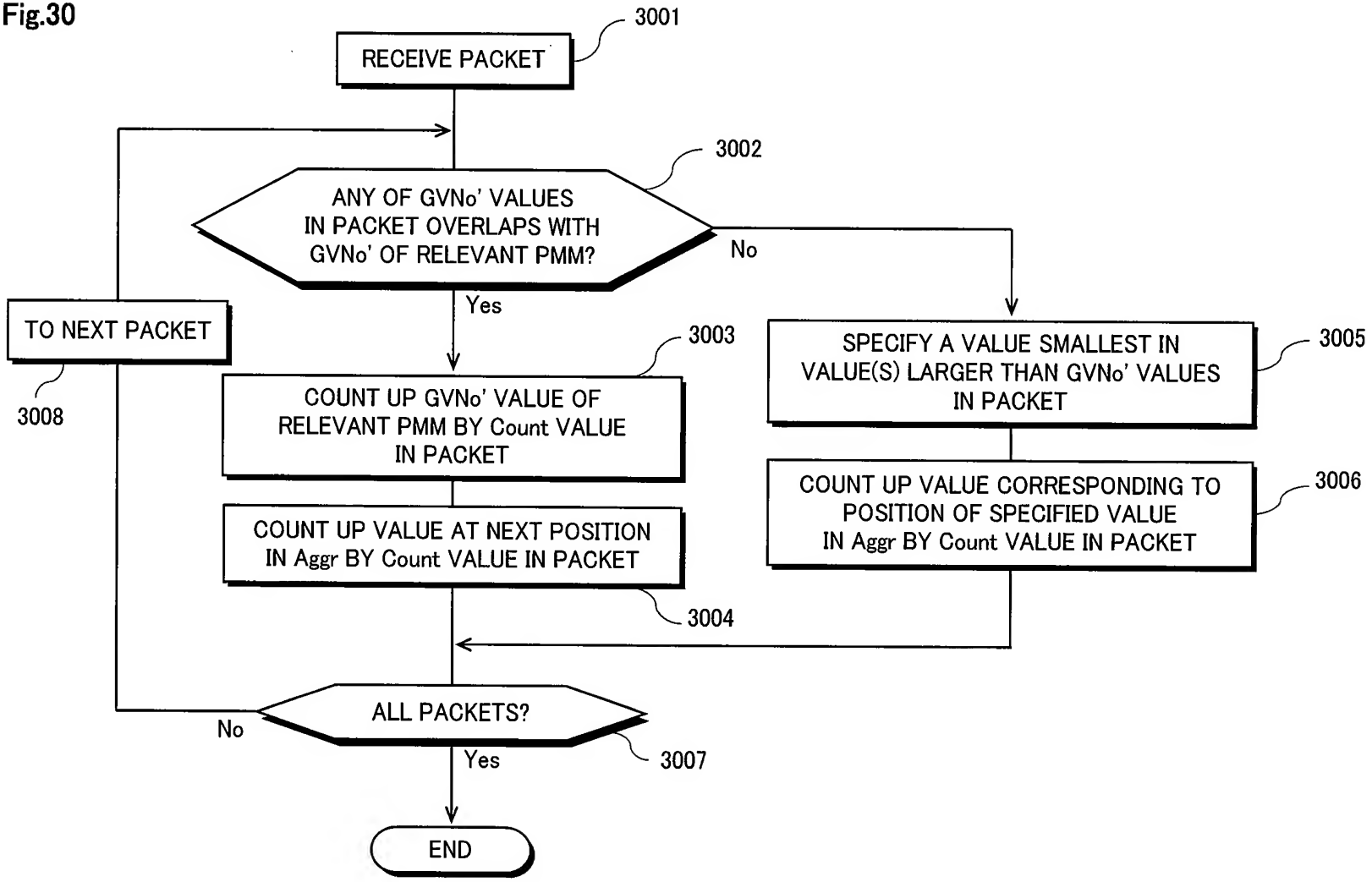

RECEIVE PACKET
3001
ANY OF GVNo' VALUES IN PACKET OVERLAPS WITH GVNo' OF RELEVANT PMM?
3002
No
Yes
TO NEXT PACKET
3008
COUNT UP GVNo' VALUE OF RELEVANT PMM BY Count VALUE IN PACKET
3003
COUNT UP VALUE AT NEXT POSITION IN Aggr BY Count VALUE IN PACKET
3004
SPECIFY A VALUE SMALLEST IN VALUE(S) LARGER THAN GVNo' VALUES IN PACKET
3005
COUNT UP VALUE CORRESPONDING TO POSITION OF SPECIFIED VALUE IN Aggr BY Count VALUE IN PACKET
3006
ALL PACKETS?
3007
No
Yes
END

Fig.31

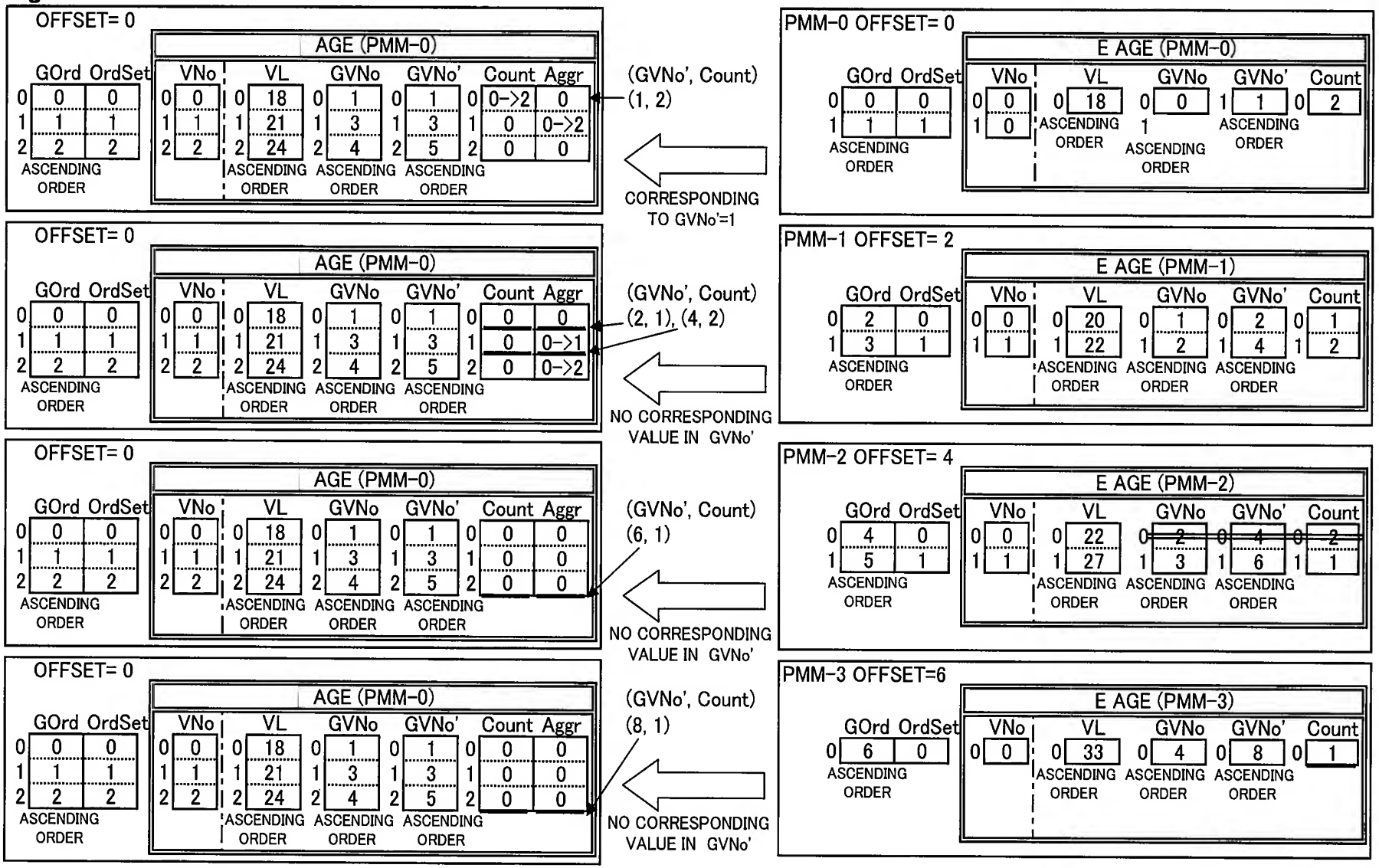

OFFSET= 0
AGE (PMM-0)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
CORRESPONDING TO GVNo'=1
PMM-0 OFFSET= 0
E AGE (PMM-0)
VNo VL GVNo GVNo' Count
(GVNo', Count)
(2, 1), (4, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-1 OFFSET= 2
E AGE (PMM-1)
(GVNo', Count)
(6, 1)
PMM-2 OFFSET= 4
E AGE (PMM-2)
(GVNo', Count)
(8, 1)
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.32

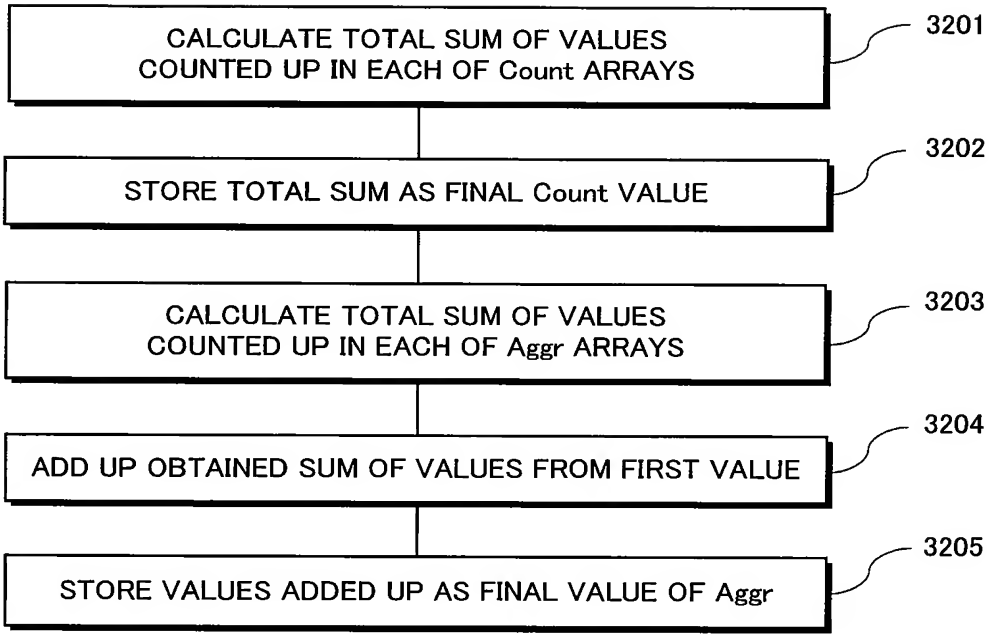

CALCULATE TOTAL SUM OF VALUES COUNTED UP IN EACH OF Count ARRAYS
3201
STORE TOTAL SUM AS FINAL Count VALUE
3202
CALCULATE TOTAL SUM OF VALUES COUNTED UP IN EACH OF Aggr ARRAYS
3203
ADD UP OBTAINED SUM OF VALUES FROM FIRST VALUE
3204
STORE VALUES ADDED UP AS FINAL VALUE OF Aggr
3205

Fig.33A

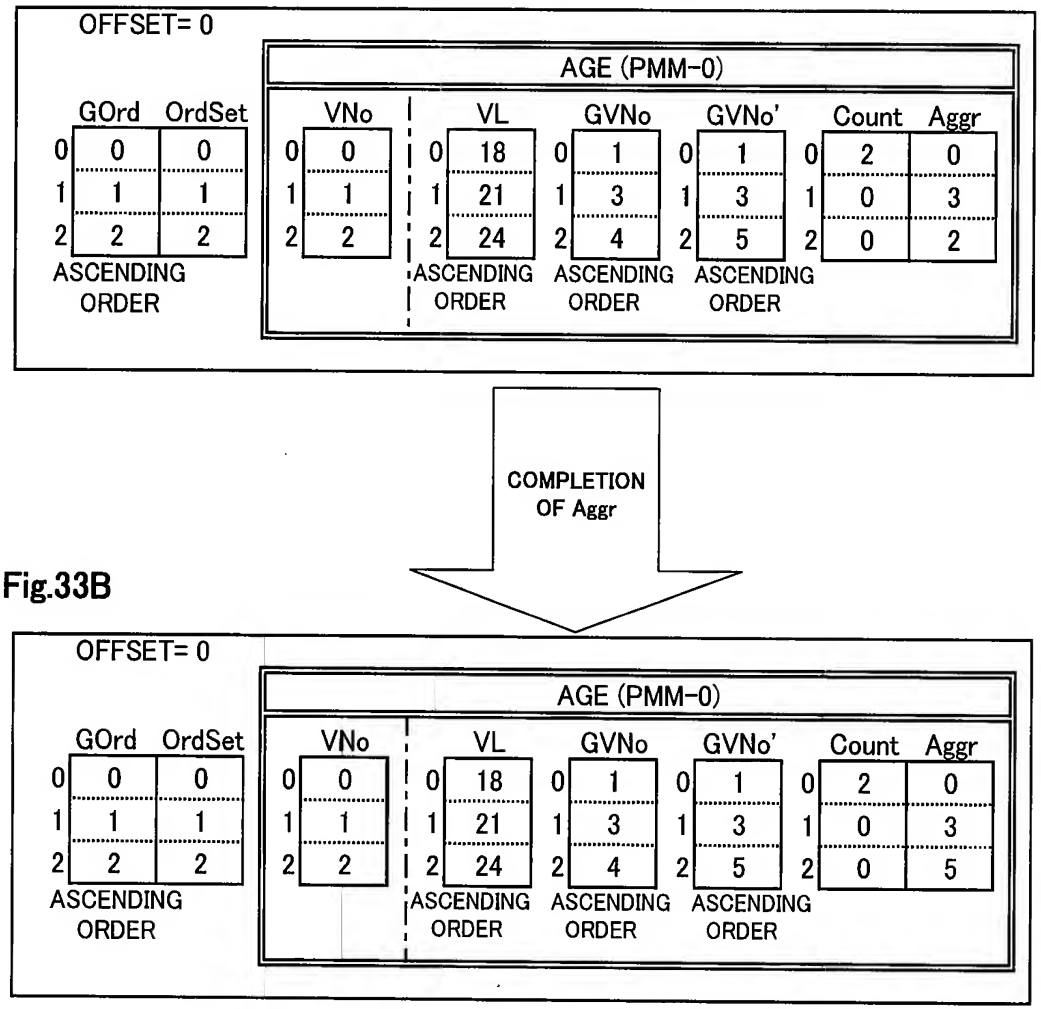


Fig.33B

Fig.34

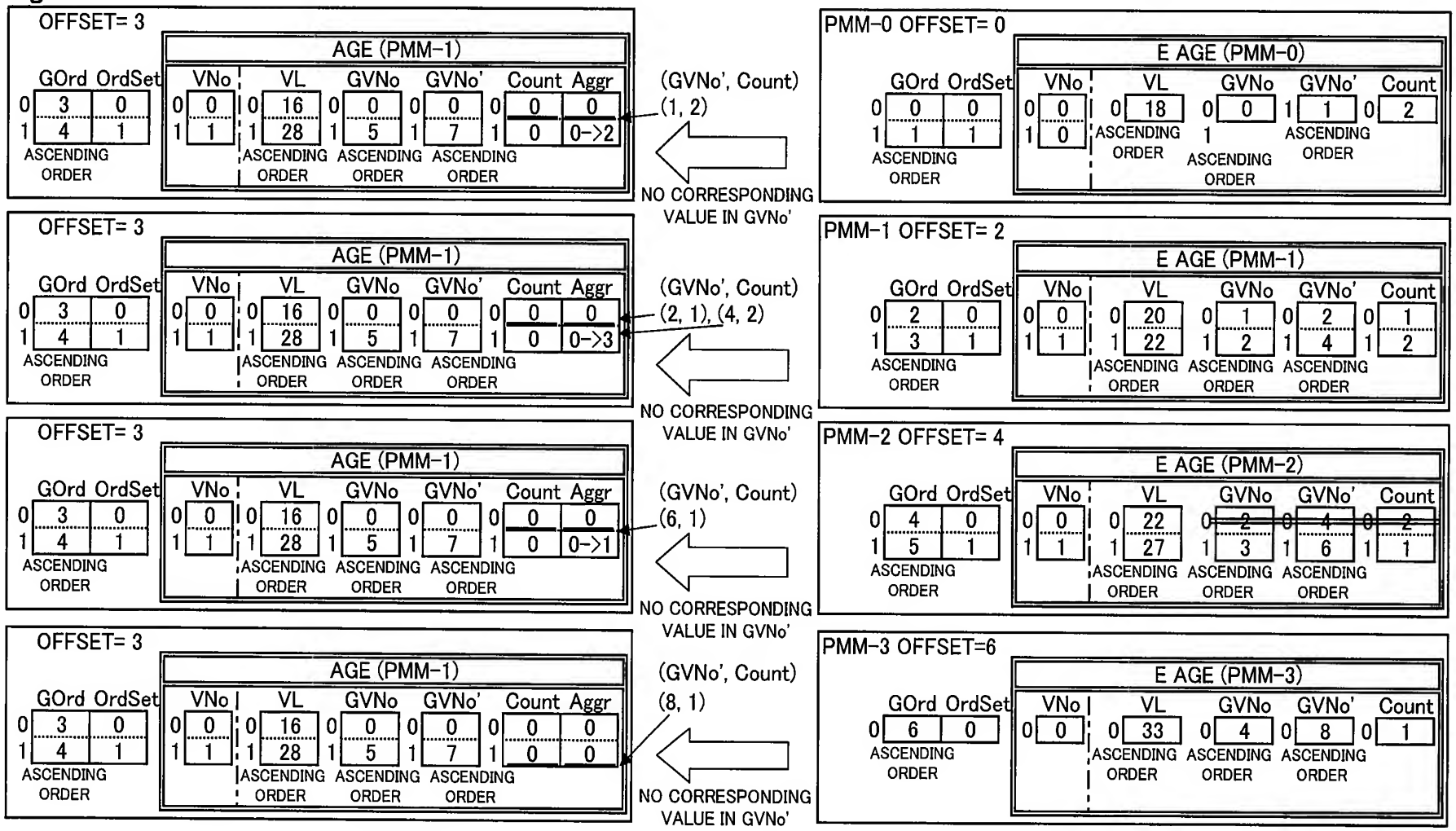

OFFSET= 3
AGE (PMM-1)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-0 OFFSET= 0
E AGE (PMM-0)
OFFSET= 3
AGE (PMM-1)
(GVNo', Count)
(2, 1), (4, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-1 OFFSET= 2
E AGE (PMM-1)
OFFSET= 3
AGE (PMM-1)
(GVNo', Count)
(6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
OFFSET= 3
AGE (PMM-1)
(GVNo', Count)
(8, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.35

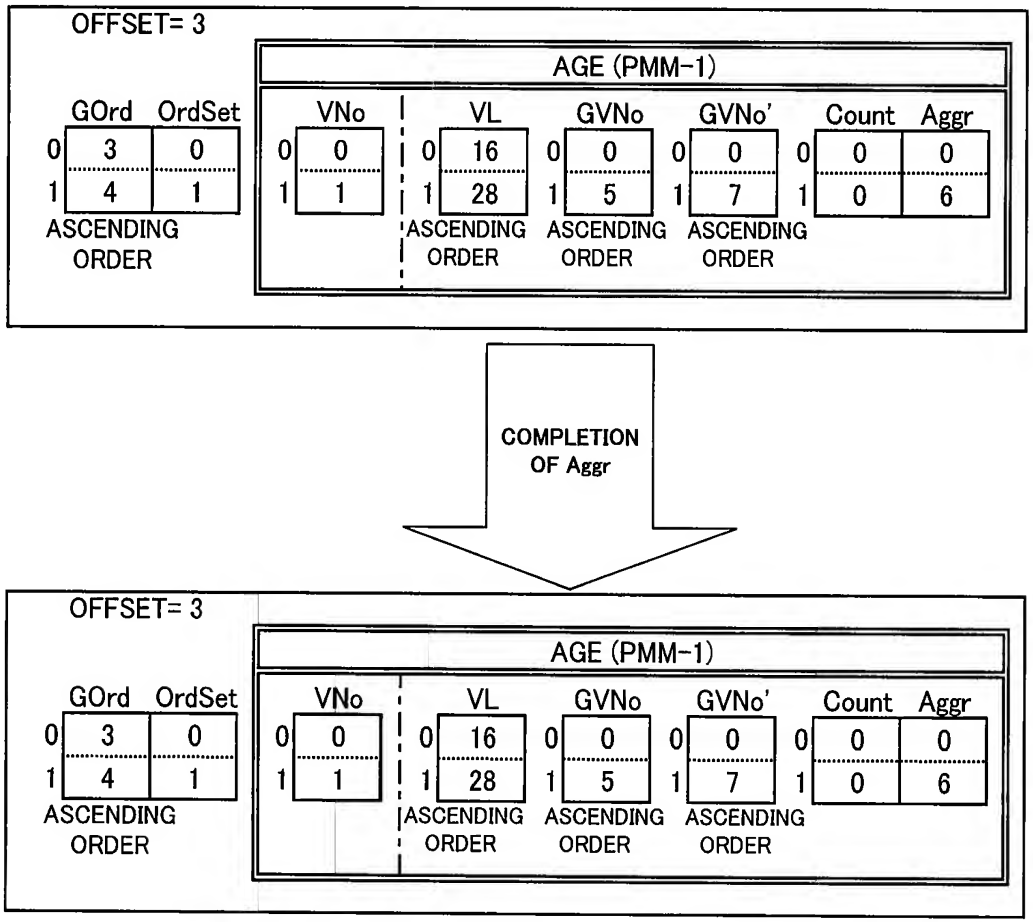

OFFSET= 3
AGE (PMM-1)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 3 0
1 4 1
ASCENDING ORDER
0 0
1 1
0 16
1 28
ASCENDING ORDER
0 0
1 5
ASCENDING ORDER
0 0
1 7
ASCENDING ORDER
0 0 0
1 0 6
COMPLETION OF Aggr
OFFSET= 3
AGE (PMM-1)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 3 0
1 4 1
ASCENDING ORDER
0 0
1 1
0 16
1 28
ASCENDING ORDER
0 0
1 5
ASCENDING ORDER
0 0
1 7
ASCENDING ORDER
0 0 0
1 0 6

Fig.36

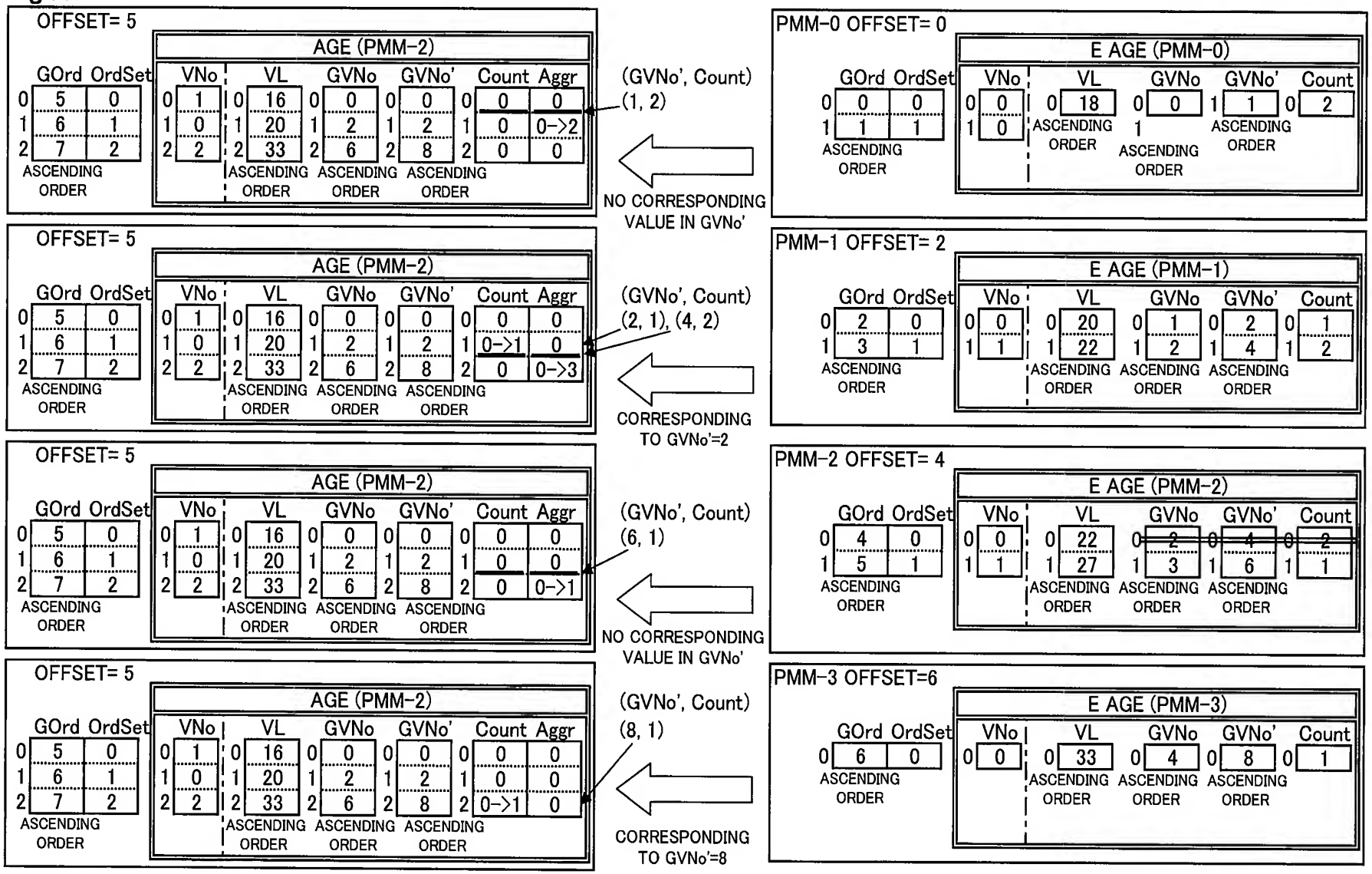

OFFSET= 5
AGE (PMM-2)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-0 OFFSET= 0
E AGE (PMM-0)
OFFSET= 5
AGE (PMM-2)
(GVNo', Count)
(2, 1), (4, 2)
CORRESPONDING TO GVNo'=2
PMM-1 OFFSET= 2
E AGE (PMM-1)
OFFSET= 5
AGE (PMM-2)
(GVNo', Count)
(6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
OFFSET= 5
AGE (PMM-2)
(GVNo', Count)
(8, 1)
CORRESPONDING TO GVNo'=8
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.37

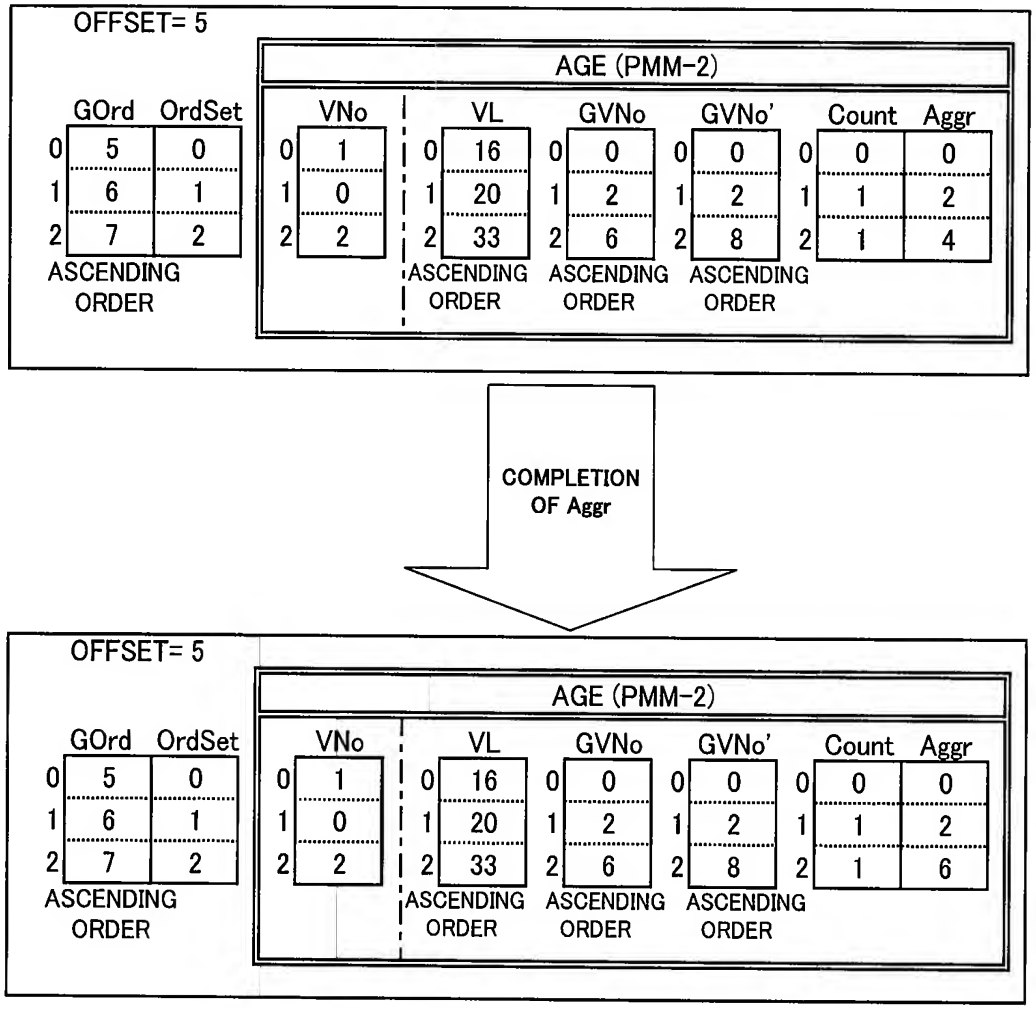

OFFSET= 5
AGE (PMM-2)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
0 1
1 0
2 2
0 16
1 20
2 33
ASCENDING ORDER
0 0
1 2
2 6
ASCENDING ORDER
0 0
1 2
2 8
ASCENDING ORDER
0 0 0
1 1 2
2 1 4
COMPLETION OF Aggr
OFFSET= 5
AGE (PMM-2)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
0 1
1 0
2 2
0 16
1 20
2 33
ASCENDING ORDER
0 0
1 2
2 6
ASCENDING ORDER
0 0
1 2
2 8
ASCENDING ORDER
0 0 0
1 1 2
2 1 6

Fig.38

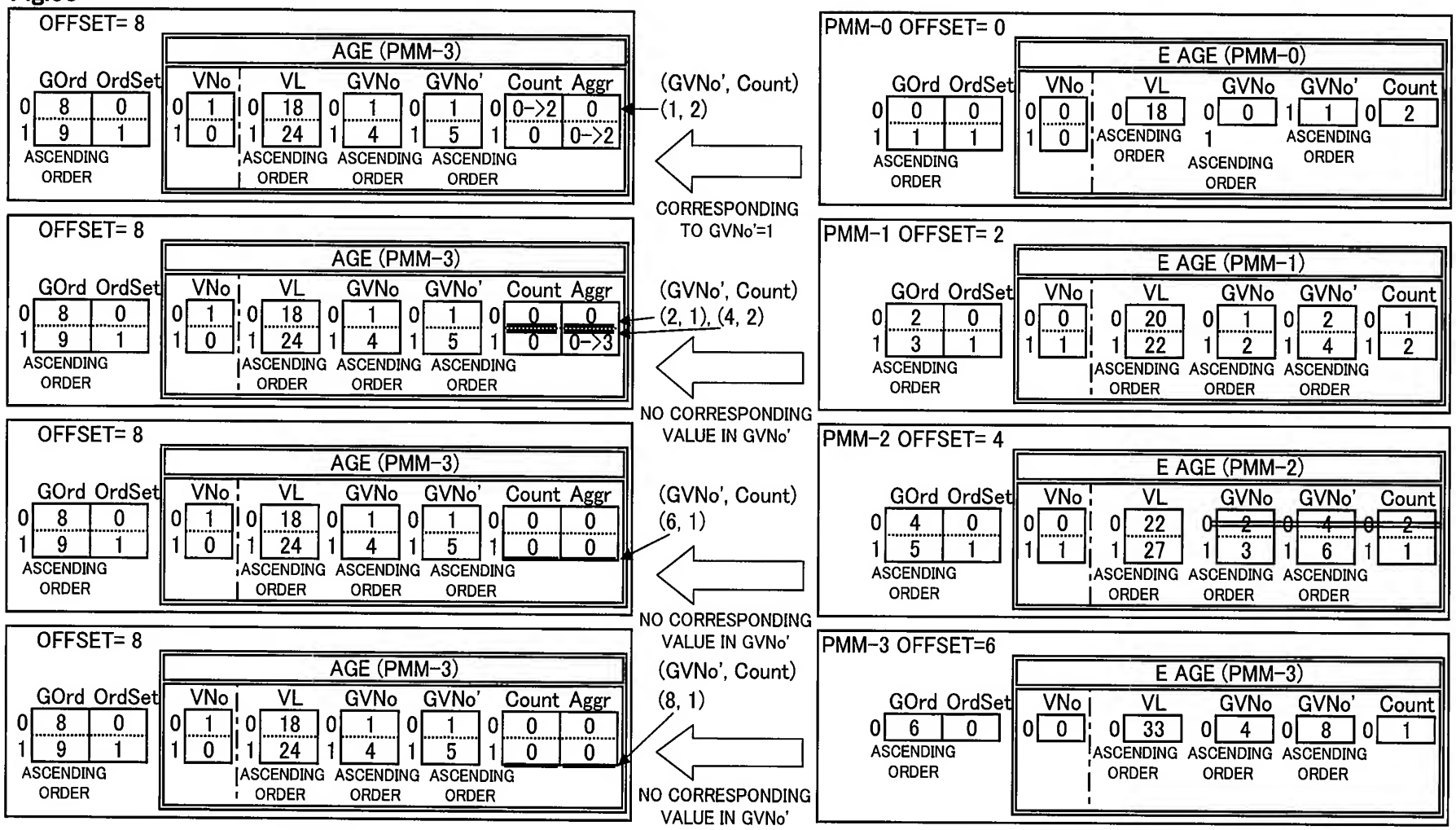

OFFSET= 8
AGE (PMM-3)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
CORRESPONDING TO GVNo'=1
PMM-0 OFFSET= 0
E AGE (PMM-0)
(GVNo', Count)
(2, 1), (4, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-1 OFFSET= 2
E AGE (PMM-1)
(GVNo', Count)
(6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
(GVNo', Count)
(8, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.39

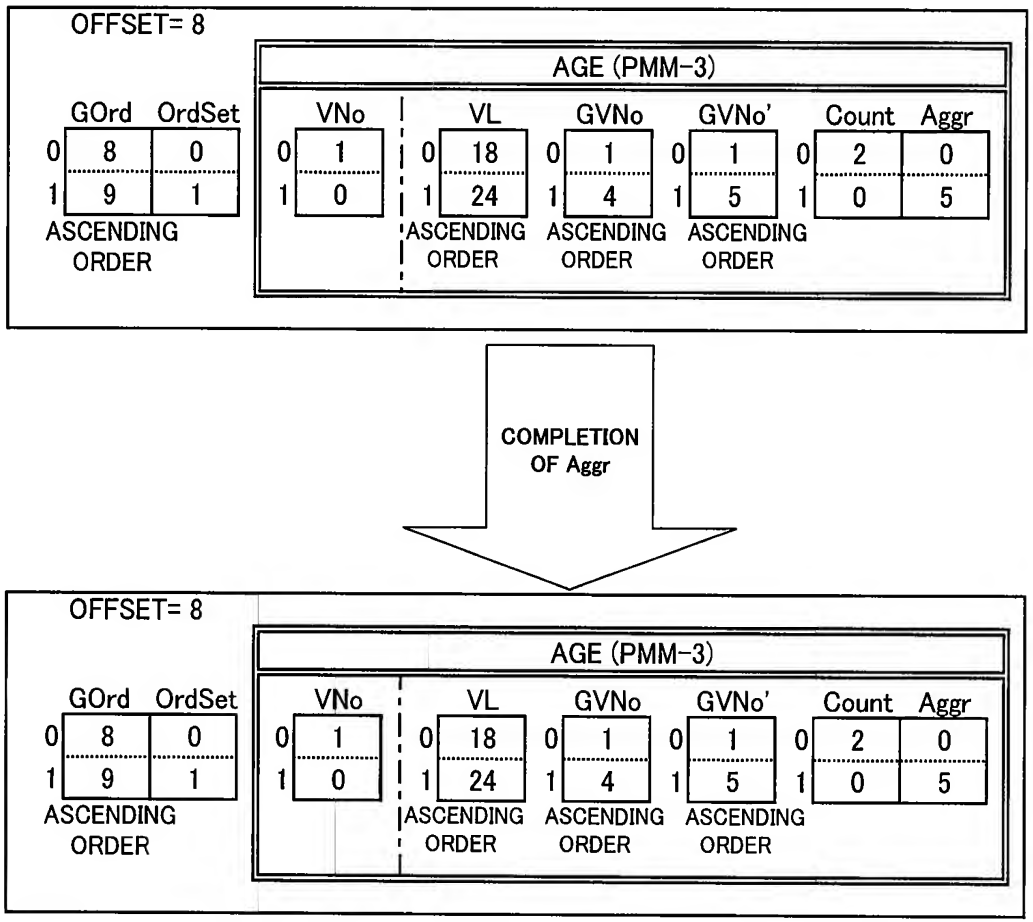

OFFSET= 8
AGE (PMM-3)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 8 0
1 9 1
ASCENDING ORDER
0 1
1 0
0 18
1 24
ASCENDING ORDER
0 1
1 4
ASCENDING ORDER
0 1
1 5
ASCENDING ORDER
0 2 0
1 0 5
COMPLETION OF Aggr
OFFSET= 8
AGE (PMM-3)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 8 0
1 9 1
ASCENDING ORDER
0 1
1 0
0 18
1 24
ASCENDING ORDER
0 1
1 4
ASCENDING ORDER
0 1
1 5
ASCENDING ORDER
0 2 0
1 0 5

Fig.40

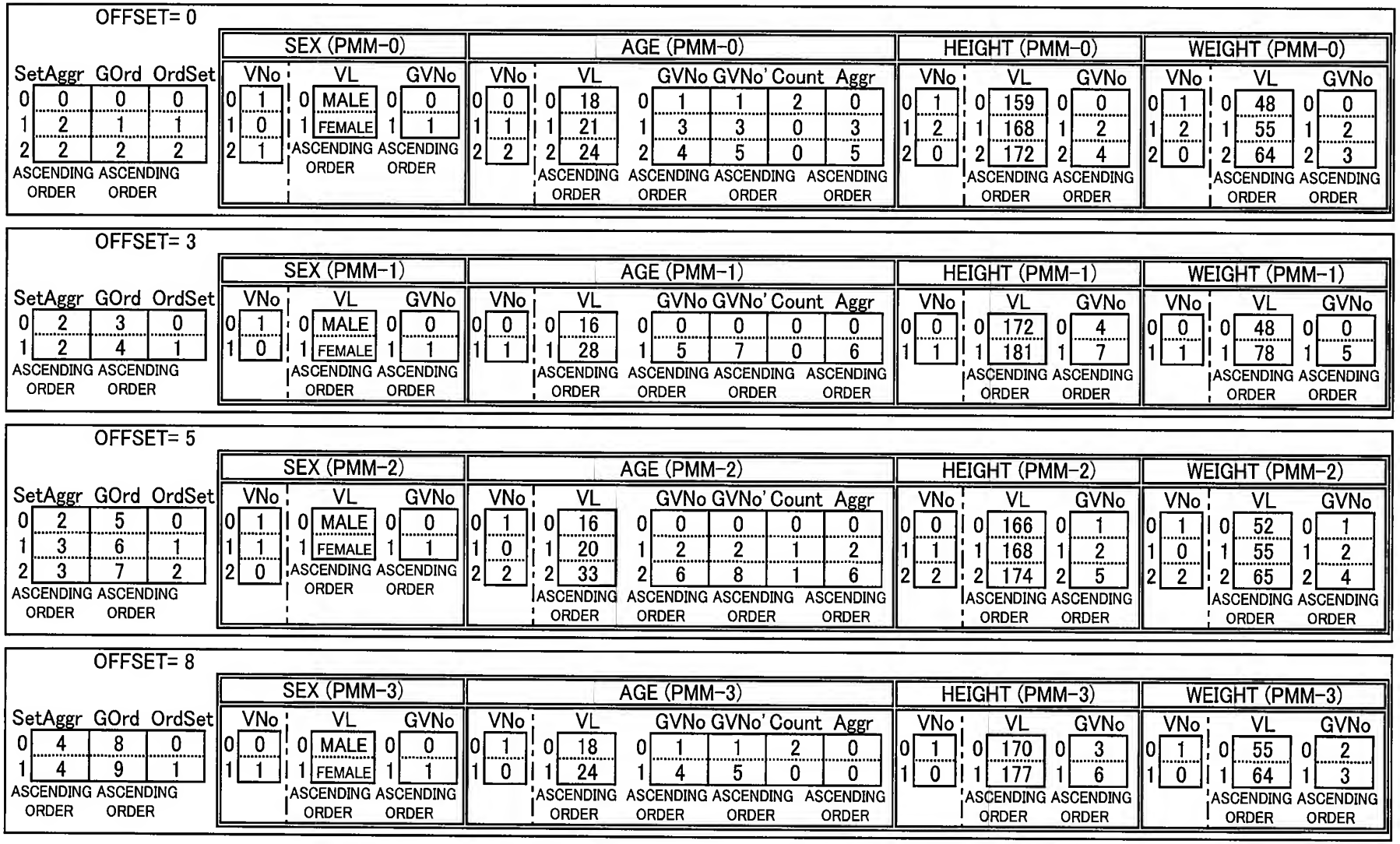

OFFSET= 0
SetAggr GOrd OrdSet
0 0 0 0
1 2 1 1
2 2 2 2
ASCENDING ORDER ASCENDING ORDER
SEX (PMM-0)
VNo
0 1
1 0
2 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
ASCENDING ORDER
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 1 1 2 0
1 3 3 0 3
2 4 5 0 5
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
HEIGHT (PMM-0)
VNo
0 1
1 2
2 0
VL
0 159
1 168
2 172
ASCENDING ORDER
GVNo
0 0
1 2
2 4
ASCENDING ORDER
WEIGHT (PMM-0)
VNo
0 1
1 2
2 0
VL
0 48
1 55
2 64
ASCENDING ORDER
GVNo
0 0
1 2
2 3
ASCENDING ORDER
OFFSET= 3
SetAggr GOrd OrdSet
0 2 3 0
1 2 4 1
ASCENDING ORDER ASCENDING ORDER
SEX (PMM-1)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
ASCENDING ORDER
VL
0 16
1 28
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 0 0 0 0
1 5 7 0 6
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
HEIGHT (PMM-1)
VNo
0 0
1 1
VL
0 172
1 181
ASCENDING ORDER
GVNo
0 4
1 7
ASCENDING ORDER
WEIGHT (PMM-1)
VNo
0 0
1 1
VL
0 48
1 78
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
OFFSET= 5
SetAggr GOrd OrdSet
0 2 5 0
1 3 6 1
2 3 7 2
ASCENDING ORDER ASCENDING ORDER
SEX (PMM-2)
VNo
0 1
1 1
2 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
ASCENDING ORDER
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 0 0 0 0
1 2 2 1 2
2 6 8 1 6
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
HEIGHT (PMM-2)
VNo
0 0
1 1
2 2
VL
0 166
1 168
2 174
ASCENDING ORDER
GVNo
0 1
1 2
2 5
ASCENDING ORDER
WEIGHT (PMM-2)
VNo
0 1
1 0
2 2
VL
0 52
1 55
2 65
ASCENDING ORDER
GVNo
0 1
1 2
2 4
ASCENDING ORDER
OFFSET= 8
SetAggr GOrd OrdSet
0 4 8 0
1 4 9 1
ASCENDING ORDER ASCENDING ORDER
SEX (PMM-3)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
ASCENDING ORDER
VL
0 18
1 24
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 1 1 2 0
1 4 5 0 0
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
HEIGHT (PMM-3)
VNo
0 1
1 0
VL
0 170
1 177
ASCENDING ORDER
GVNo
0 3
1 6
ASCENDING ORDER
WEIGHT (PMM-3)
VNo
0 1
1 0
VL
0 55
1 64
ASCENDING ORDER
GVNo
0 2
1 3
ASCENDING ORDER

Fig.41

PMM-0

	SEX	AGE	HEIGHT	WEIGHT
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48

PMM-1

	SEX	AGE	HEIGHT	WEIGHT
0	FEMALE	16	172	48
1	MALE	28	181	78

PMM-2

	SEX	AGE	HEIGHT	WEIGHT
0	FEMALE	20	166	55
1	FEMALE	16	168	52
2	MALE	33	174	65

PMM-3

	SEX	AGE	HEIGHT	WEIGHT
0	MALE	24	177	64
1	FEMALE	18	170	55

Fig.42

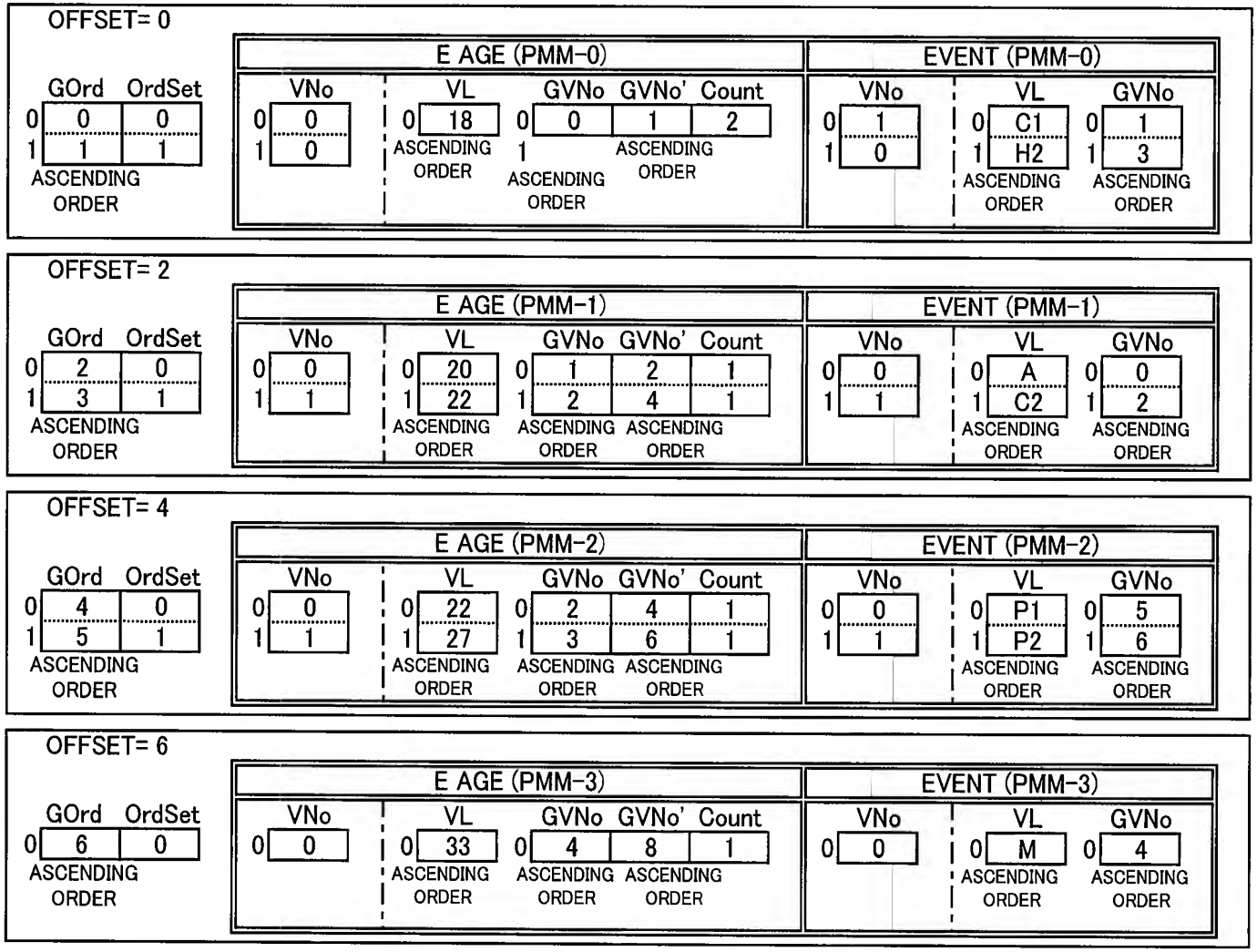

OFFSET= 0
GOrd
OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo GVNo' Count
0 0 1 2
1 ASCENDING ORDER
ASCENDING ORDER
EVENT (PMM-0)
VNo
0 1
1 0
VL
0 C1
1 H2
ASCENDING ORDER
GVNo
0 1
1 3
ASCENDING ORDER
OFFSET= 2
GOrd
OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo GVNo' Count
0 1 2 1
1 2 4 1
ASCENDING ORDER ASCENDING ORDER
EVENT (PMM-1)
VNo
0 0
1 1
VL
0 A
1 C2
ASCENDING ORDER
GVNo
0 0
1 2
ASCENDING ORDER
OFFSET= 4
GOrd
OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo GVNo' Count
0 2 4 1
1 3 6 1
ASCENDING ORDER ASCENDING ORDER
EVENT (PMM-2)
VNo
0 0
1 1
VL
0 P1
1 P2
ASCENDING ORDER
GVNo
0 5
1 6
ASCENDING ORDER
OFFSET= 6
GOrd
OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo GVNo' Count
0 4 8 1
ASCENDING ORDER ASCENDING ORDER
EVENT (PMM-3)
VNo
0 0
VL
0 M
ASCENDING ORDER
GVNo
0 4
ASCENDING ORDER

Fig.43

PMM-0 OFFSET = 0

	E AGE	EVENT
0	18	H2
1	18	C1

PMM-1 OFFSET = 2

	E AGE	EVENT
0	20	A
1	22	C2

PMM-2 OFFSET = 4

	E AGE	EVENT
0	22	P1
1	27	P2

PMM-3 OFFSET = 6

	E AGE	EVENT
0	33	M

Fig.44

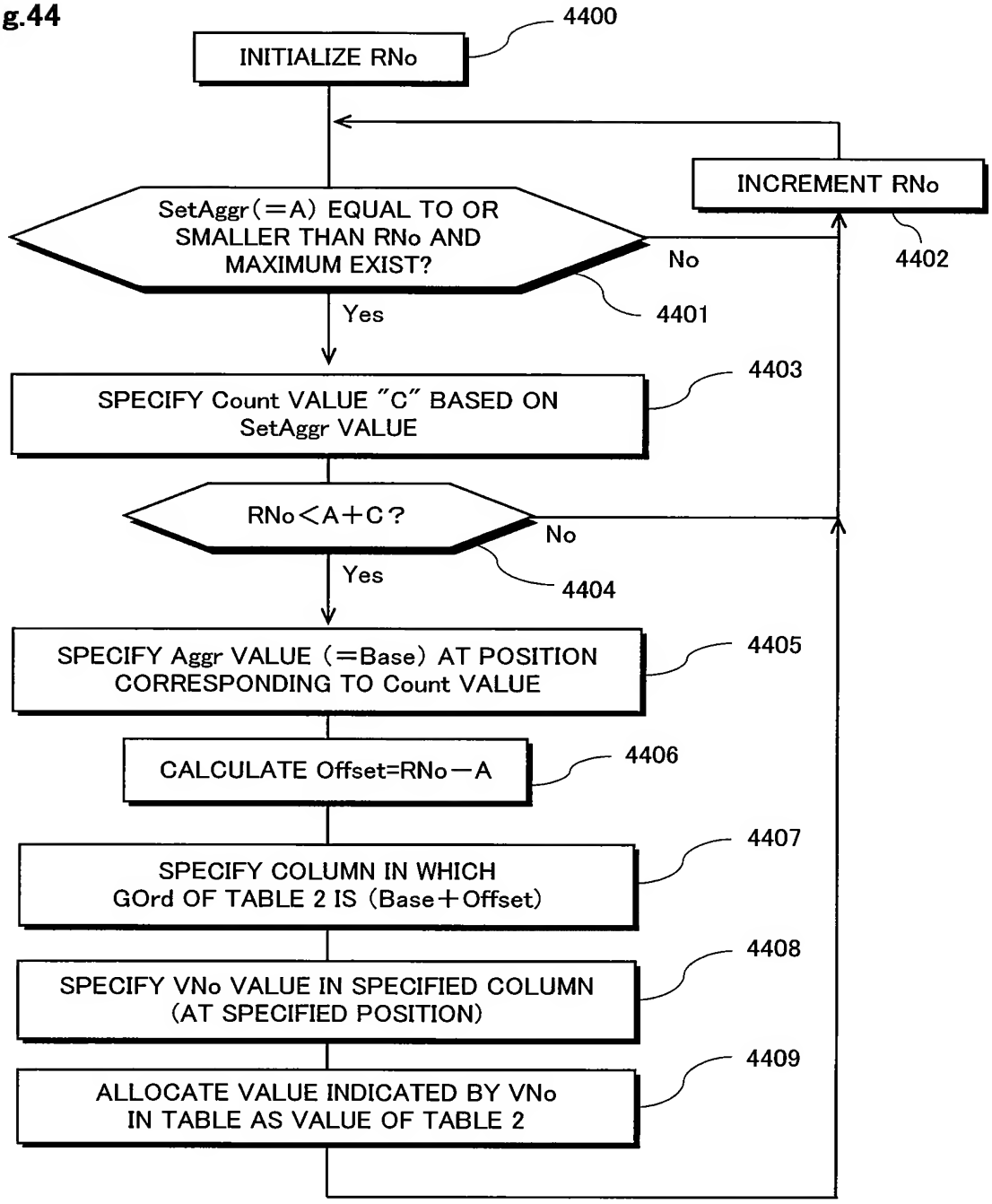

4400
INITIALIZE RNo
INCREMENT RNo
4402
SetAggr(=A) EQUAL TO OR SMALLER THAN RNo AND MAXIMUM EXIST?
No
4401
Yes
4403
SPECIFY Count VALUE "C" BASED ON SetAggr VALUE
RNo<A+C?
No
Yes
4404
4405
SPECIFY Aggr VALUE (=Base) AT POSITION CORRESPONDING TO Count VALUE
CALCULATE Offset=RNo−A
4406
4407
SPECIFY COLUMN IN WHICH GOrd OF TABLE 2 IS (Base+Offset)
4408
SPECIFY VNo VALUE IN SPECIFIED COLUMN (AT SPECIFIED POSITION)
4409
ALLOCATE VALUE INDICATED BY VNo IN TABLE AS VALUE OF TABLE 2

Fig.45

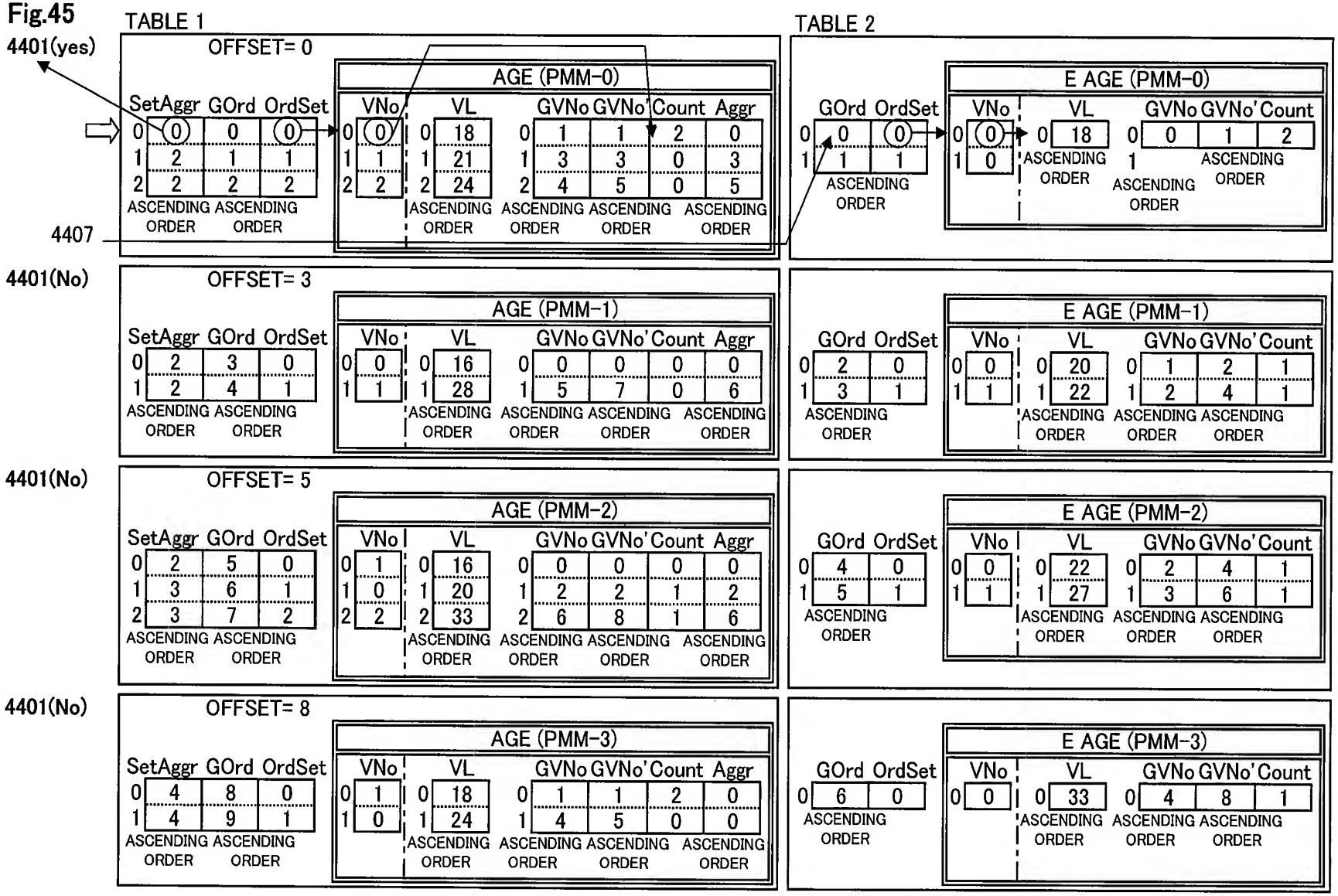


TABLE 1
TABLE 2
4401(yes)
OFFSET= 0
SetAggr GOrd OrdSet
0 0 0 0
1 2 1 1
2 2 2 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
GVNo GVNo' Count Aggr
0 1 1 2 0
1 3 3 0 3
2 4 5 0 5
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
4407
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
1 ASCENDING ORDER
GVNo GVNo' Count
0 0 1 2
1 ASCENDING ORDER
ASCENDING ORDER
4401(No)
OFFSET= 3
SetAggr GOrd OrdSet
0 2 3 0
1 2 4 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
GVNo GVNo' Count Aggr
0 0 0 0 0
1 5 7 0 6
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
GVNo GVNo' Count
0 1 2 1
1 2 4 1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
4401(No)
OFFSET= 5
SetAggr GOrd OrdSet
0 2 5 0
1 3 6 1
2 3 7 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
GVNo GVNo' Count Aggr
0 0 0 0 0
1 2 2 1 2
2 6 8 1 6
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
GVNo GVNo' Count
0 2 4 1
1 3 6 1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
4401(No)
OFFSET= 8
SetAggr GOrd OrdSet
0 4 8 0
1 4 9 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
GVNo GVNo' Count Aggr
0 1 1 2 0
1 4 5 0 0
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
GVNo GVNo' Count
0 4 8 1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER

Fig.46

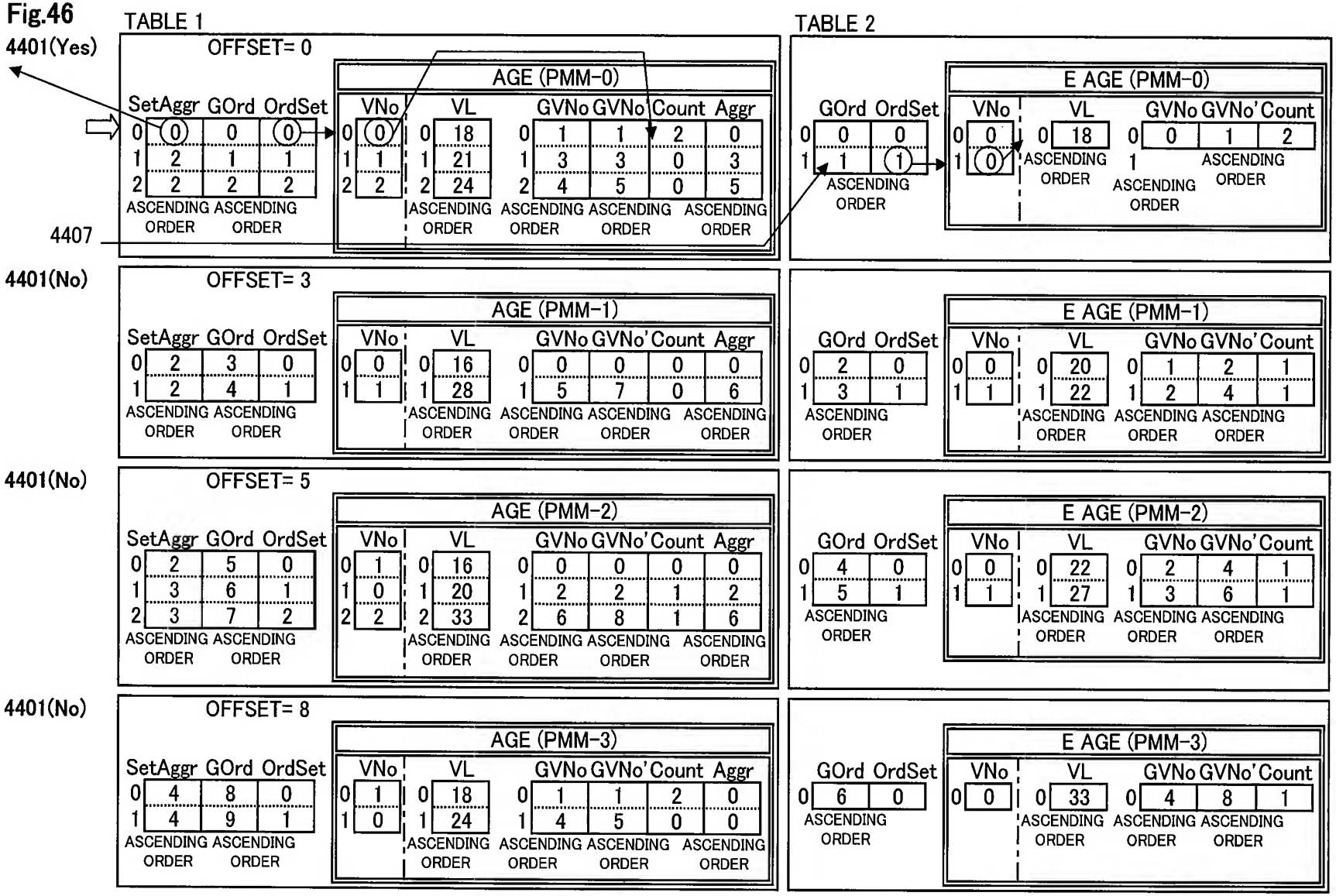


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
SetAggr GOrd OrdSet
0 0 0 0
1 2 1 1
2 2 2 2
ASCENDING ASCENDING ORDER ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
GVNo GVNo Count Aggr
0 1 1 2 0
1 3 3 0 3
2 4 5 0 5
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
4407
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo GVNo' Count
0 0 1 2
ASCENDING ORDER
1 ASCENDING ORDER
4401(No)
OFFSET= 3
SetAggr GOrd OrdSet
0 2 3 0
1 2 4 1
ASCENDING ASCENDING ORDER ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
GVNo GVNo' Count Aggr
0 0 0 0 0
1 5 7 0 6
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
GVNo GVNo' Count
0 1 2 1
1 2 4 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
4401(No)
OFFSET= 5
SetAggr GOrd OrdSet
0 2 5 0
1 3 6 1
2 3 7 2
ASCENDING ASCENDING ORDER ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
GVNo GVNo' Count Aggr
0 0 0 0 0
1 2 2 1 2
2 6 8 1 6
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
GVNo GVNo' Count
0 2 4 1
1 3 6 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
4401(No)
OFFSET= 8
SetAggr GOrd OrdSet
0 4 8 0
1 4 9 1
ASCENDING ASCENDING ORDER ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
GVNo GVNo' Count Aggr
0 1 1 2 0
1 4 5 0 0
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
GVNo GVNo' Count
0 4 8 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER

Fig.47

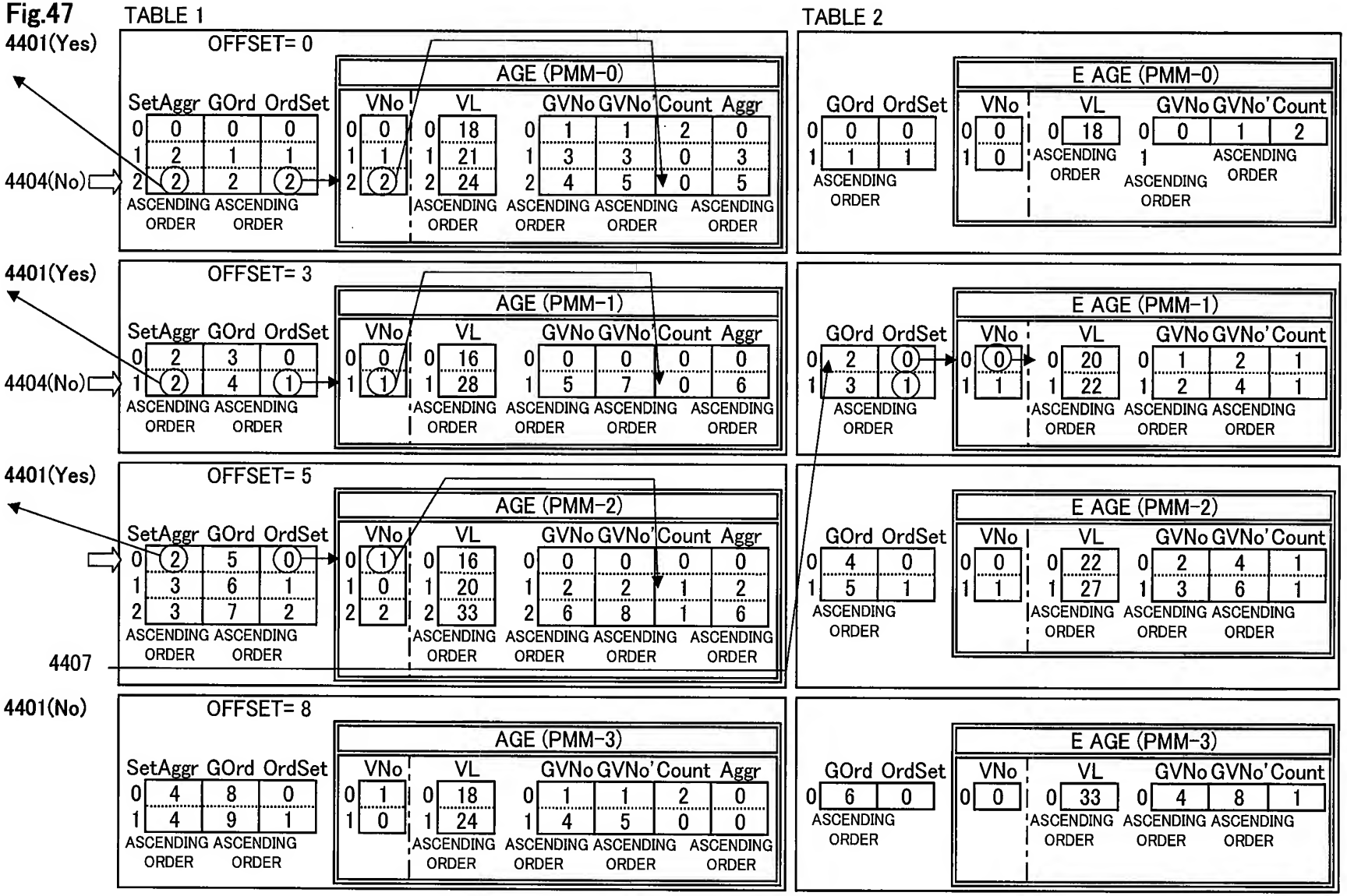


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
AGE (PMM-0)
E AGE (PMM-0)
SetAggr GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
GOrd OrdSet
VNo VL GVNo GVNo' Count
4404(No)
ASCENDING ORDER
4401(Yes)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4404(No)
4401(Yes)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4407
4401(No)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)

Fig.48

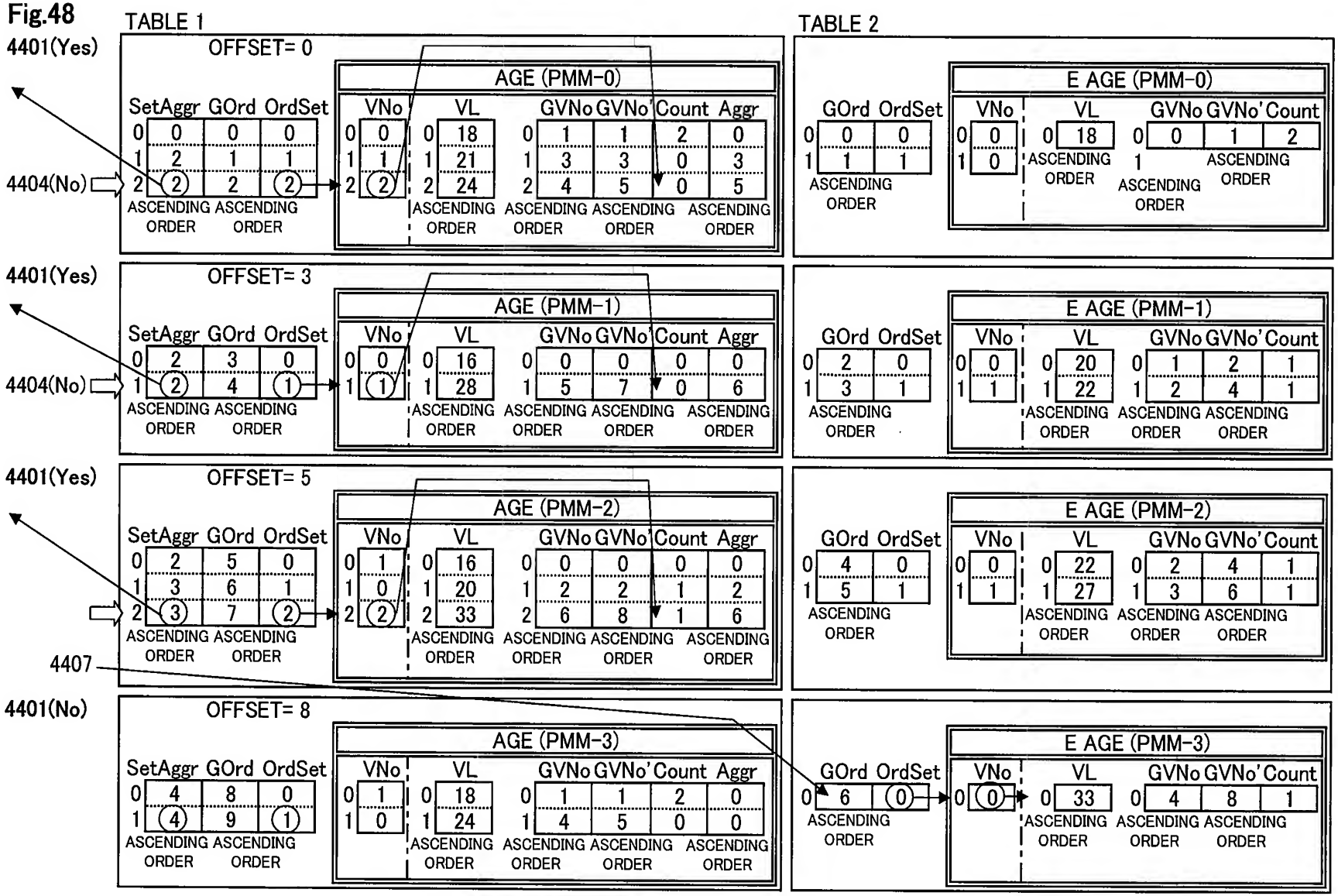


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
AGE (PMM-0)
E AGE (PMM-0)
SetAggr GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
GOrd OrdSet
VNo VL GVNo GVNo' Count
4404(No)
ASCENDING ORDER
4401(Yes)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4404(No)
4401(Yes)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4407
4401(No)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)

Fig.49

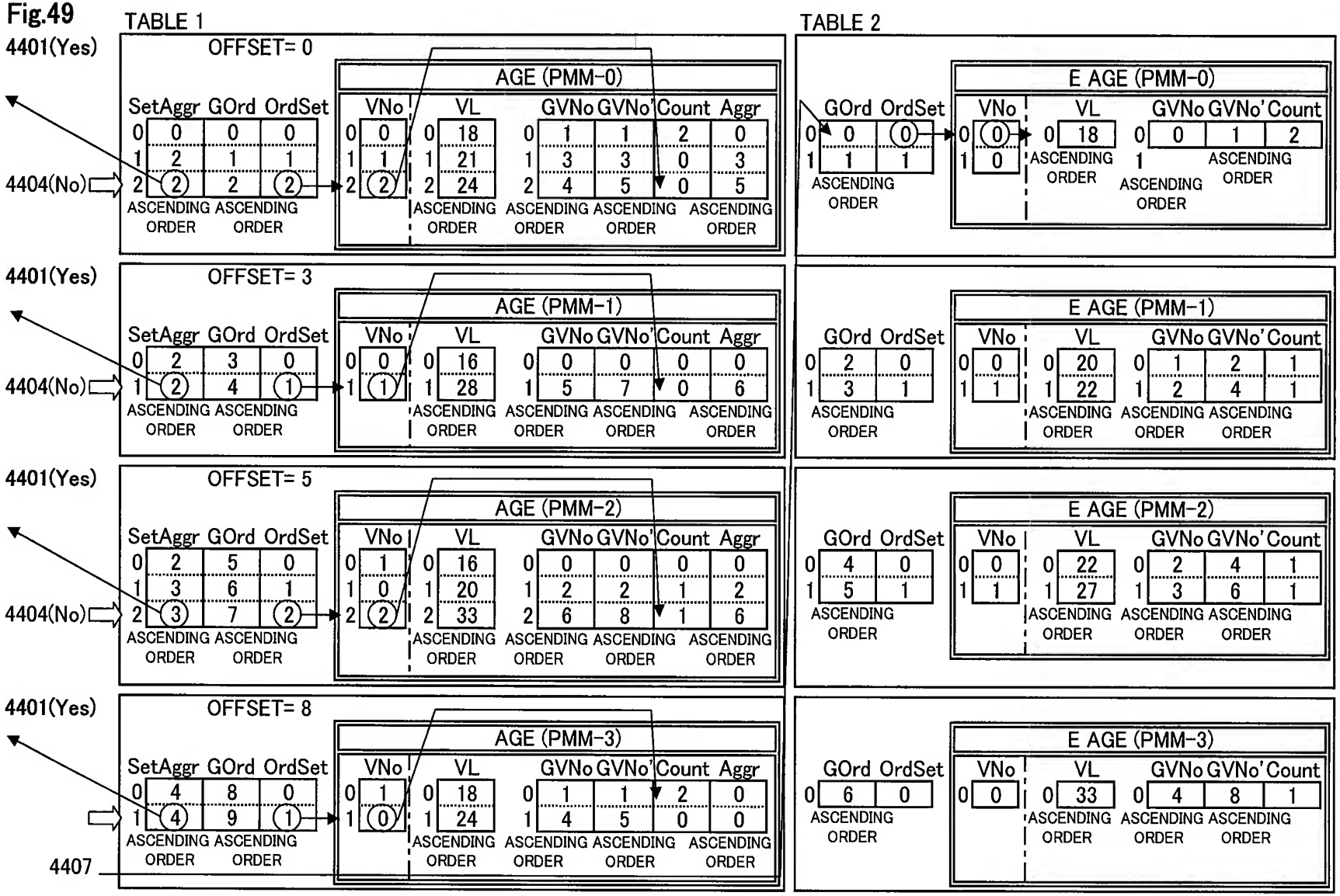


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
AGE (PMM-0)
E AGE (PMM-0)
SetAggr GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
GOrd OrdSet
VNo VL GVNo GVNo' Count
4404(No)
ASCENDING ORDER
4401(Yes)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4404(No)
4401(Yes)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4404(No)
4401(Yes)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)
4407

Fig.50

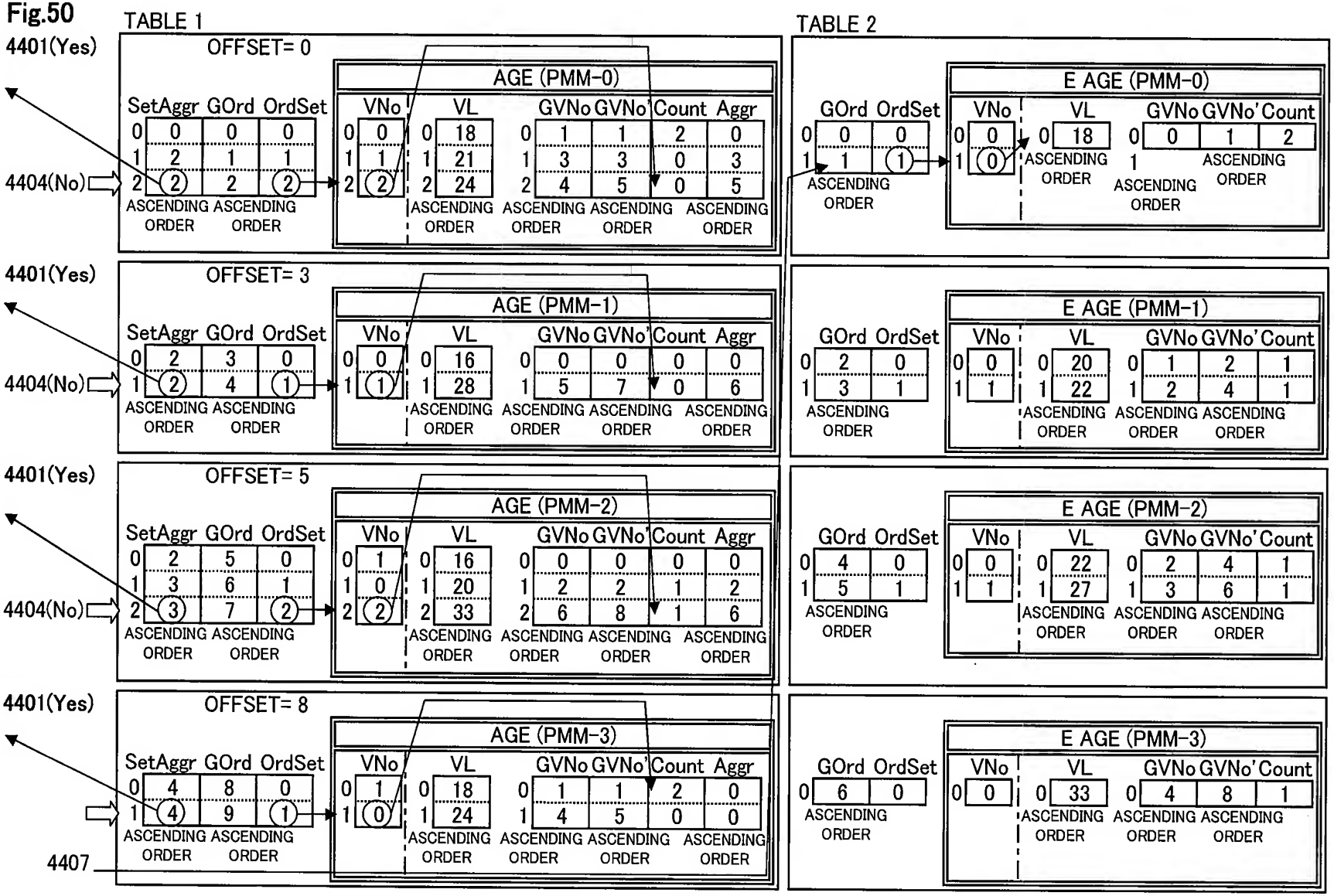


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
SetAggr GOrd OrdSet
4404(No)
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-0)
VNo VL GVNo GVNo' Count Aggr
E AGE (PMM-0)
GOrd OrdSet
VNo VL GVNo GVNo' Count
4401(Yes)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4401(Yes)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4401(Yes)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)
4407

Fig.51A

●RECORD OF JOIN TABLE = 0

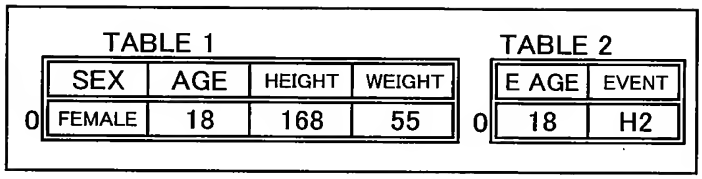


Fig.51B

●RECORD OF JOIN TABLE = 1

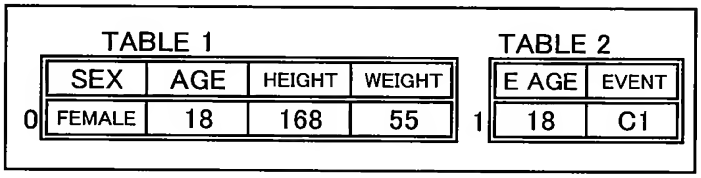


Fig.51C

●RECORD OF JOIN TABLE = 2

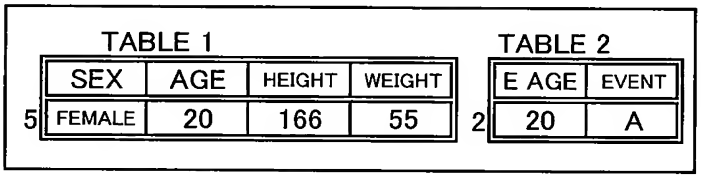


Fig.51D

●RECORD OF JOIN TABLE = 3

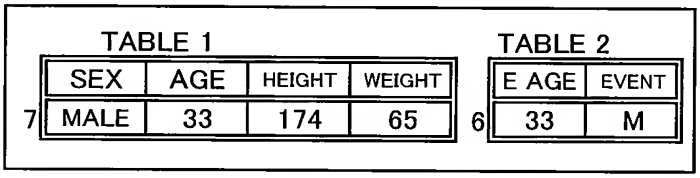


Fig.51E

●RECORD OF JOIN TABLE = 4

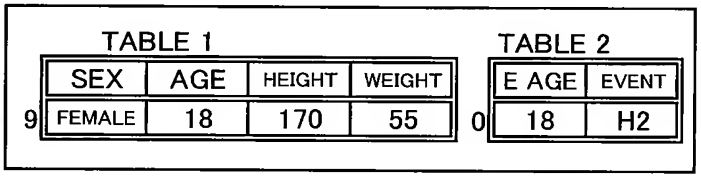


Fig.51F

●RECORD OF JOIN TABLE = 5

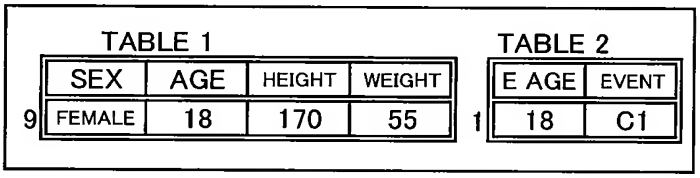


Fig.52

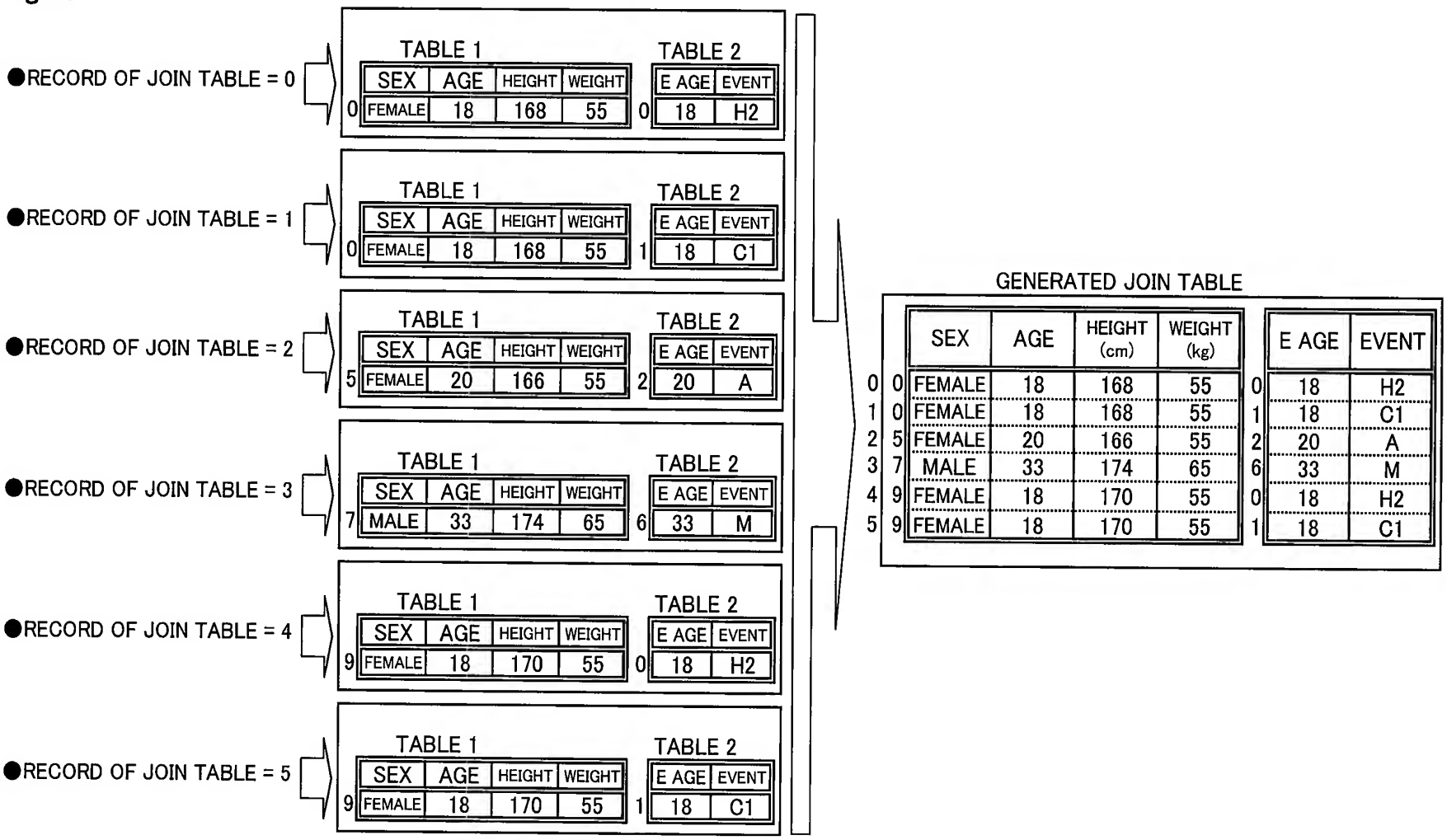
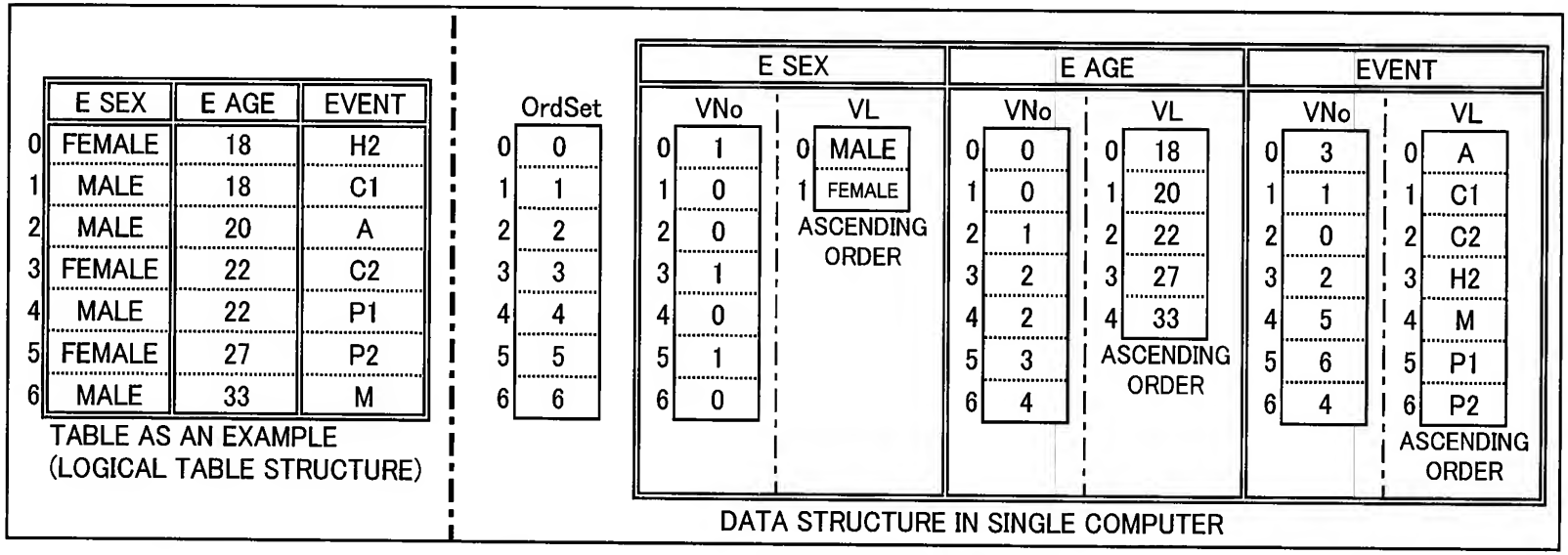

●RECORD OF JOIN TABLE = 0
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 1
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
1 18 C1
●RECORD OF JOIN TABLE = 2
TABLE 1
SEX AGE HEIGHT WEIGHT
5 FEMALE 20 166 55
TABLE 2
E AGE EVENT
2 20 A
●RECORD OF JOIN TABLE = 3
TABLE 1
SEX AGE HEIGHT WEIGHT
7 MALE 33 174 65
TABLE 2
E AGE EVENT
6 33 M
●RECORD OF JOIN TABLE = 4
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 5
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
1 18 C1
GENERATED JOIN TABLE
SEX AGE HEIGHT (cm) WEIGHT (kg) E AGE EVENT
0 0 FEMALE 18 168 55 0 18 H2
1 0 FEMALE 18 168 55 1 18 C1
2 5 FEMALE 20 166 55 2 20 A
3 7 MALE 33 174 65 6 33 M
4 9 FEMALE 18 170 55 0 18 H2
5 9 FEMALE 18 170 55 1 18 C1

Fig.53



	E SEX	E AGE	EVENT
0	FEMALE	18	H2
1	MALE	18	C1
2	MALE	20	A
3	FEMALE	22	C2
4	MALE	22	P1
5	FEMALE	27	P2
6	MALE	33	M

	OrdSet
0	0
1	1
2	2
3	3
4	4
5	5
6	6

E SEX

	VNo
0	1
1	0
2	0
3	1
4	0
5	1
6	0

	VL
0	MALE
1	FEMALE

ASCENDING ORDER

E AGE

	VNo
0	0
1	0
2	1
3	2
4	2
5	3
6	4

	VL
0	18
1	20
2	22
3	27
4	33

ASCENDING ORDER

EVENT

	VNo
0	3
1	1
2	0
3	2
4	5
5	6
6	4

	VL
0	A
1	C1
2	C2
3	H2
4	M
5	P1
6	P2

ASCENDING ORDER

MEANINGS OF SYMBOLS

GOrd	Global Order No.
OrdSet	Ordered Set
VNo	Value No.
VL	Value List
GVNo	Global Value No.

Fig.54

PMM-0 OFFSET = 0

	E SEX	E AGE	EVENT
0	FEMALE	18	H2
1	MALE	18	C1

PMM-1 OFFSET = 2

	E SEX	E AGE	EVENT
0	MALE	20	A
1	FEMALE	22	C2

PMM-2 OFFSET = 4

	E SEX	E AGE	EVENT
0	MALE	22	P1
1	FEMALE	27	P2

PMM-3 OFFSET = 6

	E SEX	E AGE	EVENT
0	MALE	33	M

Fig.55

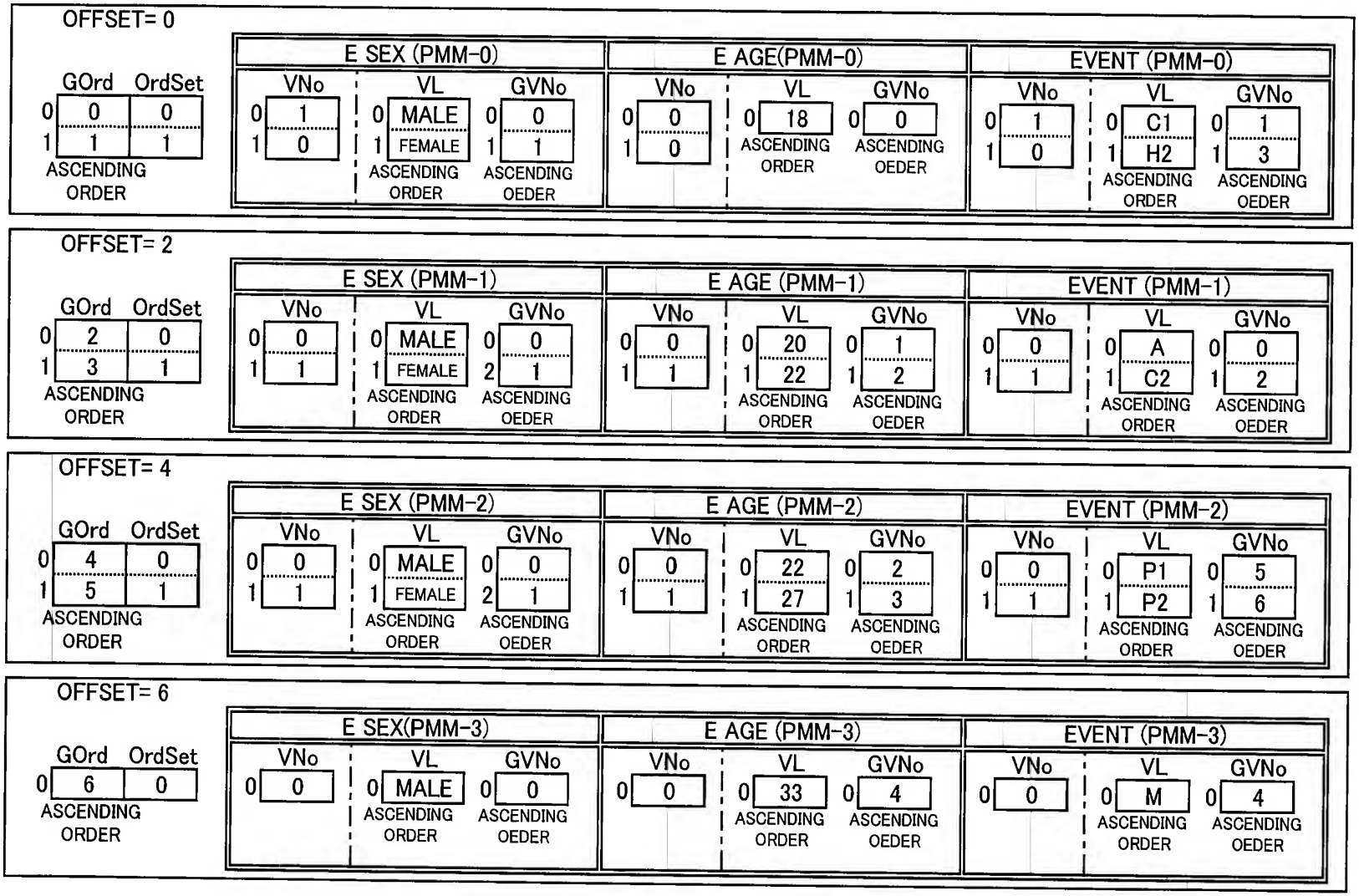

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E SEX (PMM-0)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING OEDER
E AGE(PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo
0 0
ASCENDING OEDER
EVENT (PMM-0)
VNo
0 1
1 0
VL
0 C1
1 H2
ASCENDING ORDER
GVNo
0 1
1 3
ASCENDING OEDER
OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E SEX (PMM-1)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
2 1
ASCENDING OEDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo
0 1
1 2
ASCENDING OEDER
EVENT (PMM-1)
VNo
0 0
1 1
VL
0 A
1 C2
ASCENDING ORDER
GVNo
0 0
1 2
ASCENDING OEDER
OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E SEX (PMM-2)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
2 1
ASCENDING OEDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo
0 2
1 3
ASCENDING OEDER
EVENT (PMM-2)
VNo
0 0
1 1
VL
0 P1
1 P2
ASCENDING ORDER
GVNo
0 5
1 6
ASCENDING OEDER
OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E SEX(PMM-3)
VNo
0 0
VL
0 MALE
ASCENDING ORDER
GVNo
0 0
ASCENDING OEDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo
0 4
ASCENDING OEDER
EVENT (PMM-3)
VNo
0 0
VL
0 M
ASCENDING ORDER
GVNo
0 4
ASCENDING OEDER

Fig.56

TABLE 1

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48
3	FEMALE	16	172	48
4	MALE	28	181	78
5	FEMALE	20	166	55
6	FEMALE	16	168	52
7	MALE	33	174	65
8	MALE	24	177	64
9	FEMALE	18	170	55

INTERNAL JOIN OF PLURAL ITEMS

SEX・AGE × E SEX・E AGE

TABLE 2

	E SEX	E AGE	EVENT
0	FEMALE	18	H2
1	MALE	18	C1
2	MALE	20	A
3	FEMALE	22	C2
4	MALE	22	P1
5	FEMALE	27	P2
6	MALE	33	M

GENERATED JOIN TABLE

		SEX	AGE	HEIGHT(cm)	WEIGHT(kg)		E SEX	E AGE	EVENT
0	0	FEMALE	18	168	55	0	FEMALE	18	H2
1	7	MALE	33	174	65	6	MALE	33	M
2	9	FEMALE	18	170	55	0	FEMALE	18	H2

Fig.57

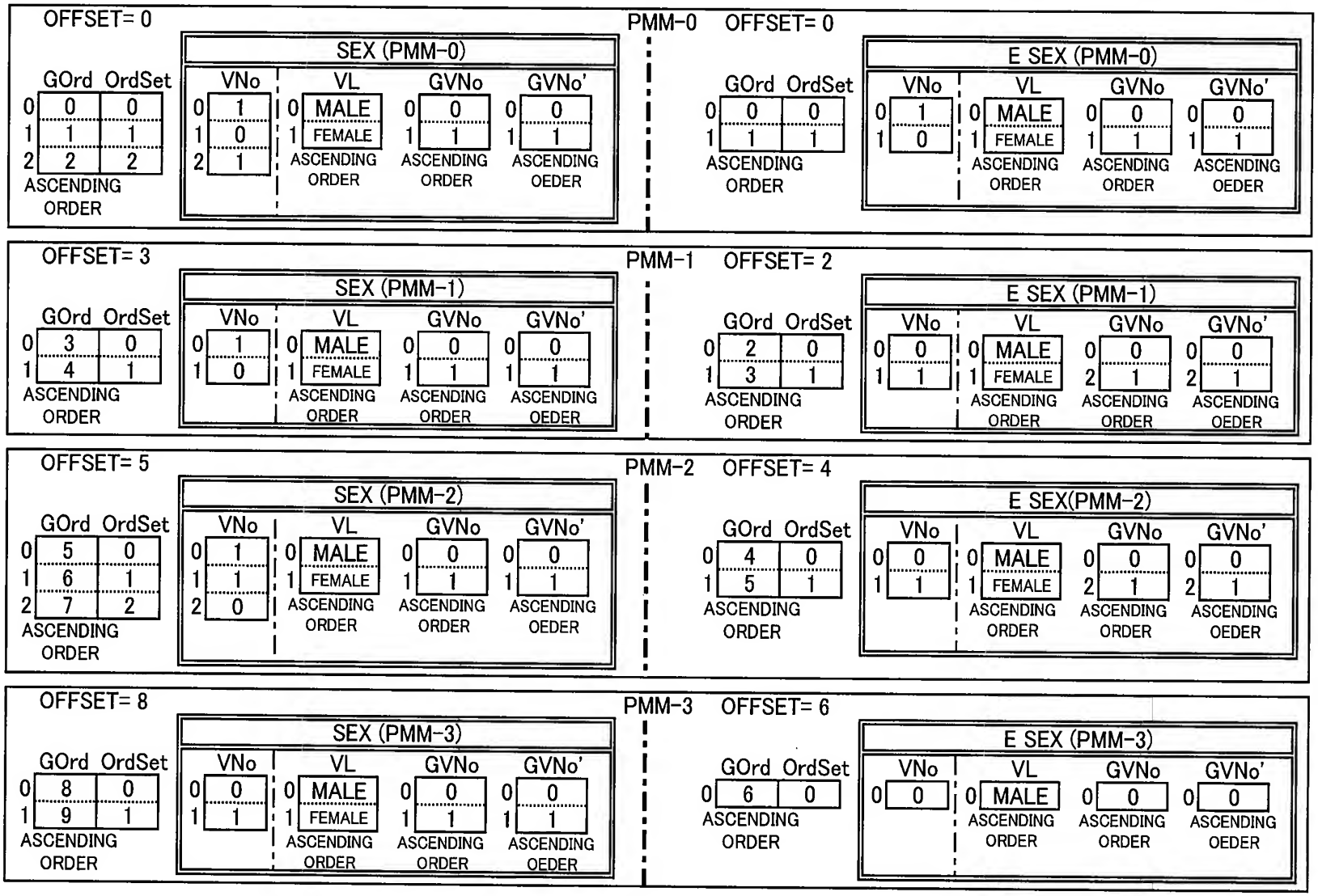

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SEX (PMM-0)
VNo
0 1
1 0
2 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING OEDER
PMM-0 OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E SEX (PMM-0)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING OEDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SEX (PMM-1)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING OEDER
PMM-1 OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E SEX (PMM-1)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
2 1
ASCENDING ORDER
GVNo'
0 0
2 1
ASCENDING OEDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SEX (PMM-2)
VNo
0 1
1 1
2 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING OEDER
PMM-2 OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E SEX(PMM-2)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
2 1
ASCENDING ORDER
GVNo'
0 0
2 1
ASCENDING OEDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SEX (PMM-3)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo
0 0
1 1
ASCENDING ORDER
GVNo'
0 0
1 1
ASCENDING OEDER
PMM-3 OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E SEX (PMM-3)
VNo
0 0
VL
0 MALE
ASCENDING ORDER
GVNo
0 0
ASCENDING ORDER
GVNo'
0 0
ASCENDING OEDER

Fig.58

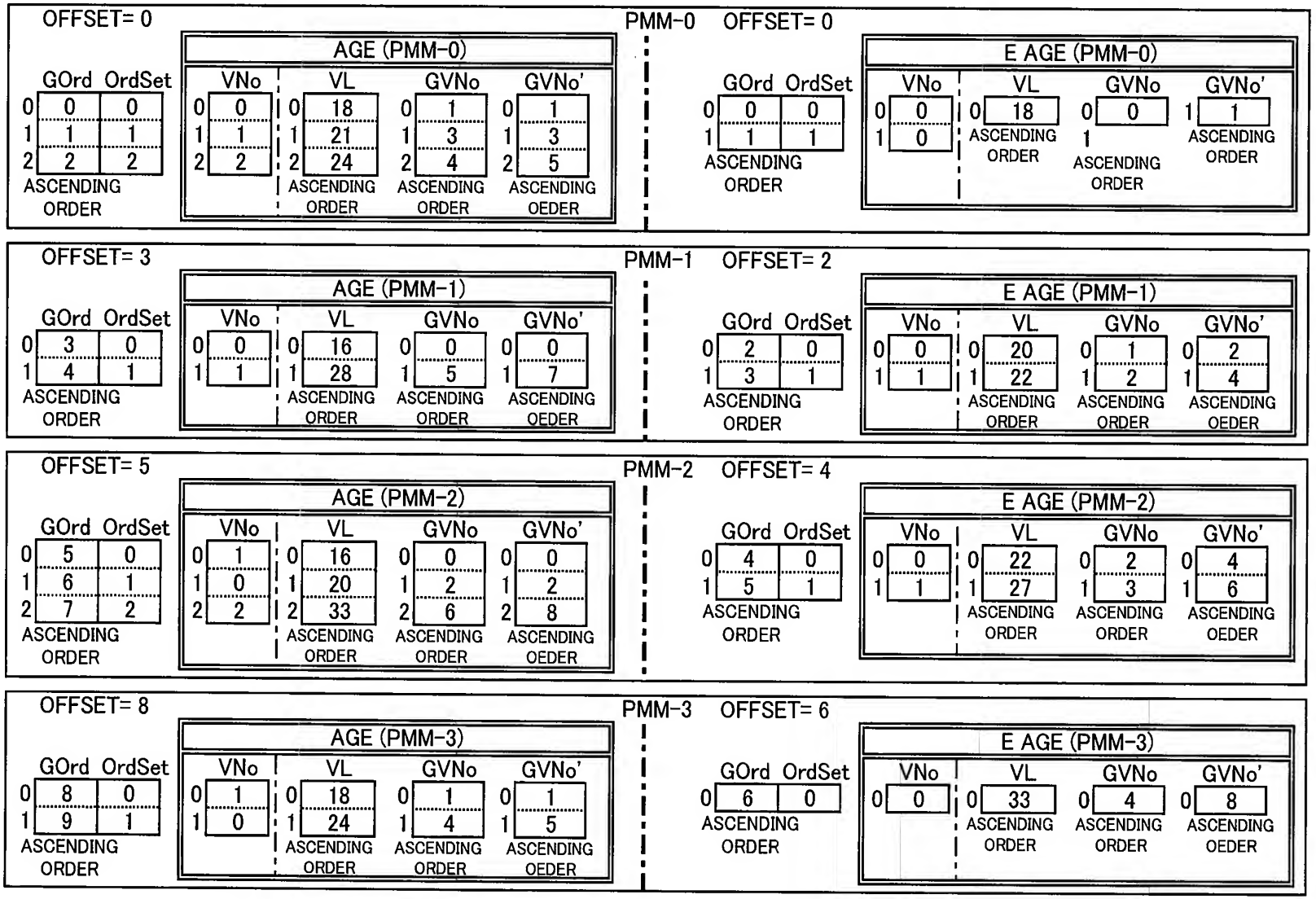

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo
0 1
1 3
2 4
ASCENDING ORDER
GVNo'
0 1
1 3
2 5
ASCENDING OEDER
PMM-0 OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo
0 0
1
ASCENDING ORDER
GVNo'
1 1
ASCENDING ORDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
GVNo'
0 0
1 7
ASCENDING OEDER
PMM-1 OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo
0 1
1 2
ASCENDING ORDER
GVNo'
0 2
1 4
ASCENDING OEDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo
0 0
1 2
2 6
ASCENDING ORDER
GVNo'
0 0
1 2
2 8
ASCENDING OEDER
PMM-2 OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo
0 2
1 3
ASCENDING ORDER
GVNo'
0 4
1 6
ASCENDING OEDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
GVNo'
0 1
1 5
ASCENDING OEDER
PMM-3 OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo
0 4
ASCENDING ORDER
GVNo'
0 8
ASCENDING OEDER

Fig.59

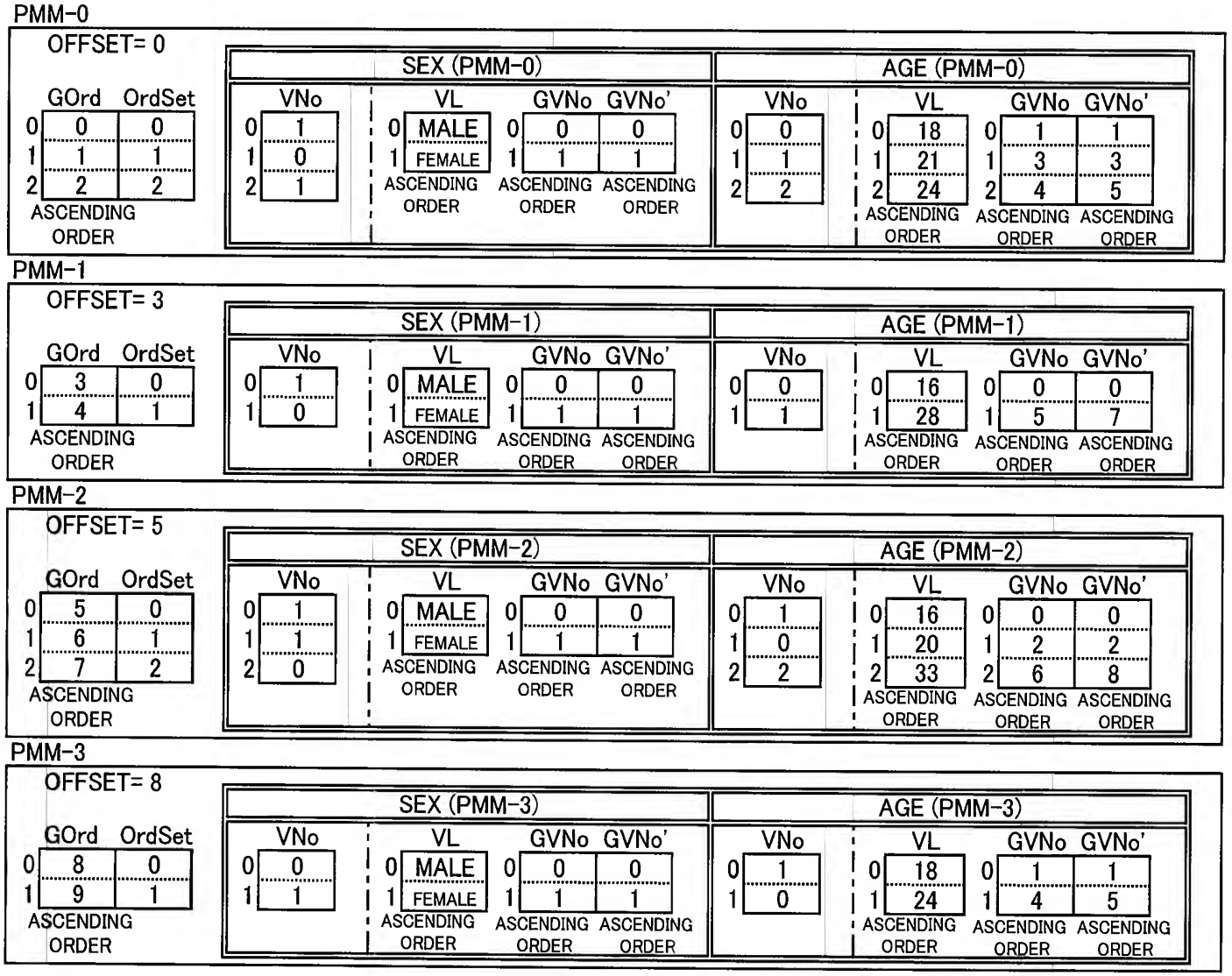

PMM-0
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SEX (PMM-0)
VNo
0 1
1 0
2 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo GVNo'
0 1 1
1 3 3
2 4 5
ASCENDING ORDER ASCENDING ORDER
PMM-1
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SEX (PMM-1)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 5 7
ASCENDING ORDER ASCENDING ORDER
PMM-2
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SEX (PMM-2)
VNo
0 1
1 1
2 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 2 2
2 6 8
ASCENDING ORDER ASCENDING ORDER
PMM-3
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SEX (PMM-3)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo GVNo'
0 1 1
1 4 5
ASCENDING ORDER ASCENDING ORDER

Fig.60

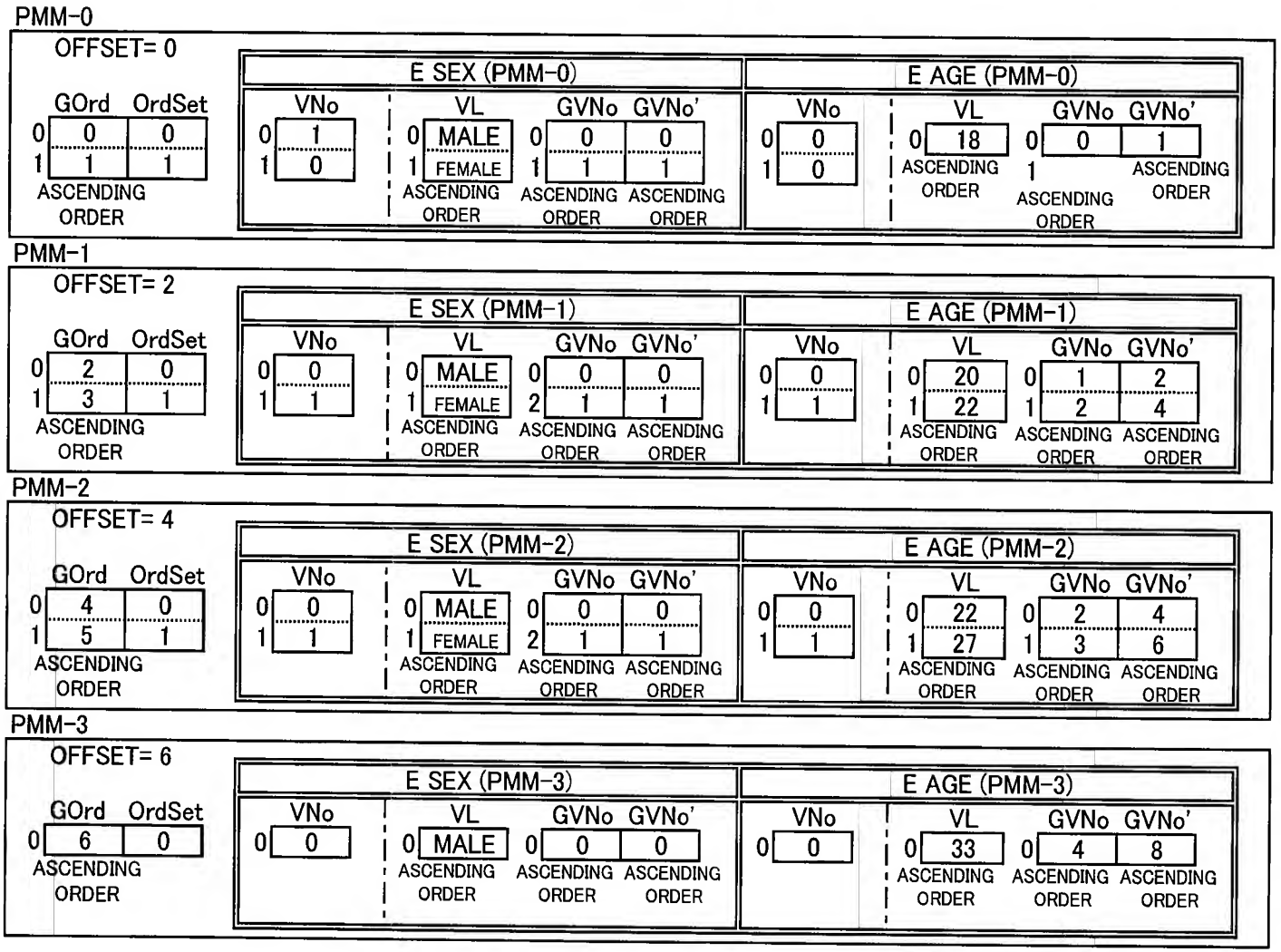

PMM-0
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E SEX (PMM-0)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-0)
VNo
0 0
1 0
VL
0 18
ASCENDING ORDER
GVNo GVNo'
0 0 1
1 ASCENDING ORDER ASCENDING ORDER
PMM-1
OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E SEX (PMM-1)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
2 1 1
ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-1)
VNo
0 0
1 1
VL
0 20
1 22
ASCENDING ORDER
GVNo GVNo'
0 1 2
1 2 4
ASCENDING ORDER ASCENDING ORDER
PMM-2
OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E SEX (PMM-2)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
2 1 1
ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-2)
VNo
0 0
1 1
VL
0 22
1 27
ASCENDING ORDER
GVNo GVNo'
0 2 4
1 3 6
ASCENDING ORDER ASCENDING ORDER
PMM-3
OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E SEX (PMM-3)
VNo
0 0
VL
0 MALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-3)
VNo
0 0
VL
0 33
ASCENDING ORDER
GVNo GVNo'
0 4 8
ASCENDING ORDER ASCENDING ORDER

Fig.61

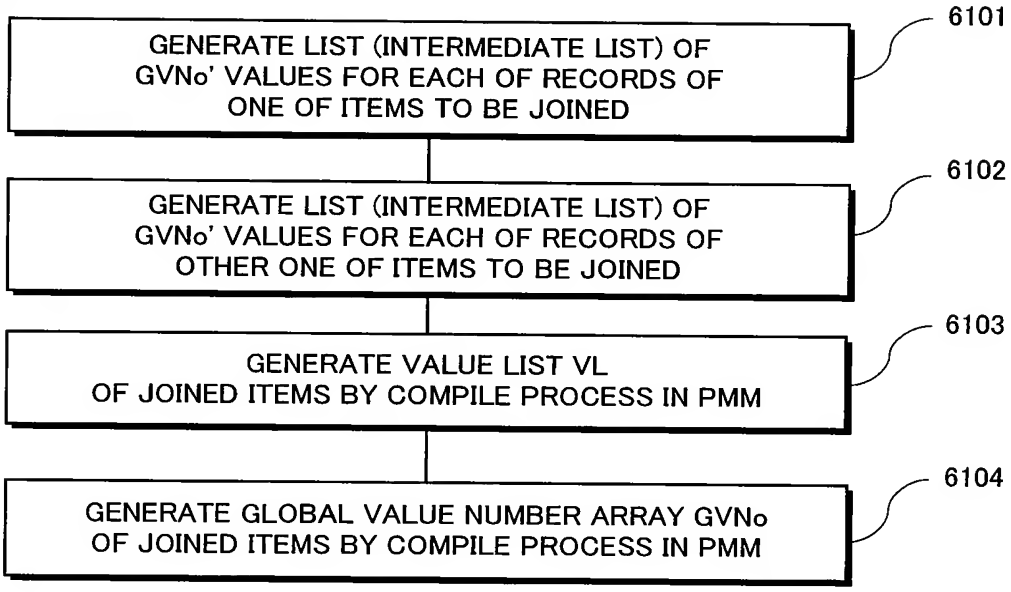

GENERATE LIST (INTERMEDIATE LIST) OF GVNo' VALUES FOR EACH OF RECORDS OF ONE OF ITEMS TO BE JOINED
6101
GENERATE LIST (INTERMEDIATE LIST) OF GVNo' VALUES FOR EACH OF RECORDS OF OTHER ONE OF ITEMS TO BE JOINED
6102
GENERATE VALUE LIST VL OF JOINED ITEMS BY COMPILE PROCESS IN PMM
6103
GENERATE GLOBAL VALUE NUMBER ARRAY GVNo OF JOINED ITEMS BY COMPILE PROCESS IN PMM
6104

Fig.62

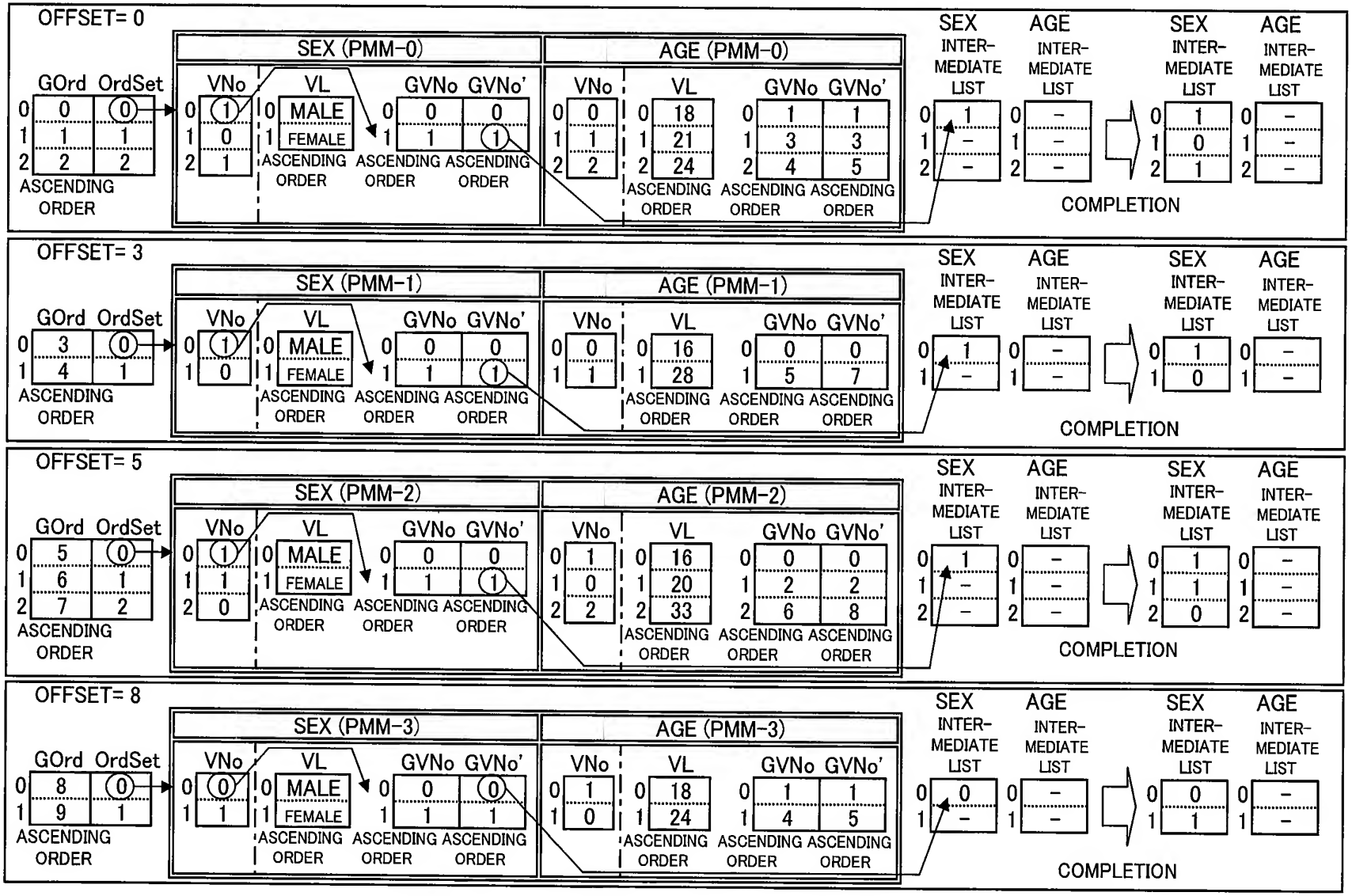

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SEX (PMM-0)
VNo VL GVNo GVNo'
0 1 0 MALE 0 0 0
1 0 1 FEMALE 1 1 1
2 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
AGE (PMM-0)
VNo VL GVNo GVNo'
0 0 0 18 0 1 1
1 1 21 1 3 3
2 2 24 2 4 5
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 1 0 –
1 – 1 –
2 – 2 –
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 1 0 –
1 0 1 –
2 1 2 –
COMPLETION
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SEX (PMM-1)
VNo VL GVNo GVNo'
0 1 0 MALE 0 0 0
1 0 1 FEMALE 1 1 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
AGE (PMM-1)
VNo VL GVNo GVNo'
0 0 0 16 0 0 0
1 1 28 1 5 7
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 1 0 –
1 – 1 –
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 1 0 –
1 0 1 –
COMPLETION
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SEX (PMM-2)
VNo VL GVNo GVNo'
0 1 0 MALE 0 0 0
1 1 1 FEMALE 1 1 1
2 0
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
AGE (PMM-2)
VNo VL GVNo GVNo'
0 1 0 16 0 0 0
1 0 1 20 1 2 2
2 2 2 33 2 6 8
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 1 0 –
1 – 1 –
2 – 2 –
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 1 0 –
1 1 1 –
2 0 2 –
COMPLETION
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SEX (PMM-3)
VNo VL GVNo GVNo'
0 0 0 MALE 0 0 0
1 1 1 FEMALE 1 1 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
AGE (PMM-3)
VNo VL GVNo GVNo'
0 1 0 18 0 1 1
1 0 1 24 1 4 5
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 0 0 –
1 – 1 –
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
0 0 0 –
1 1 1 –
COMPLETION

Fig.63

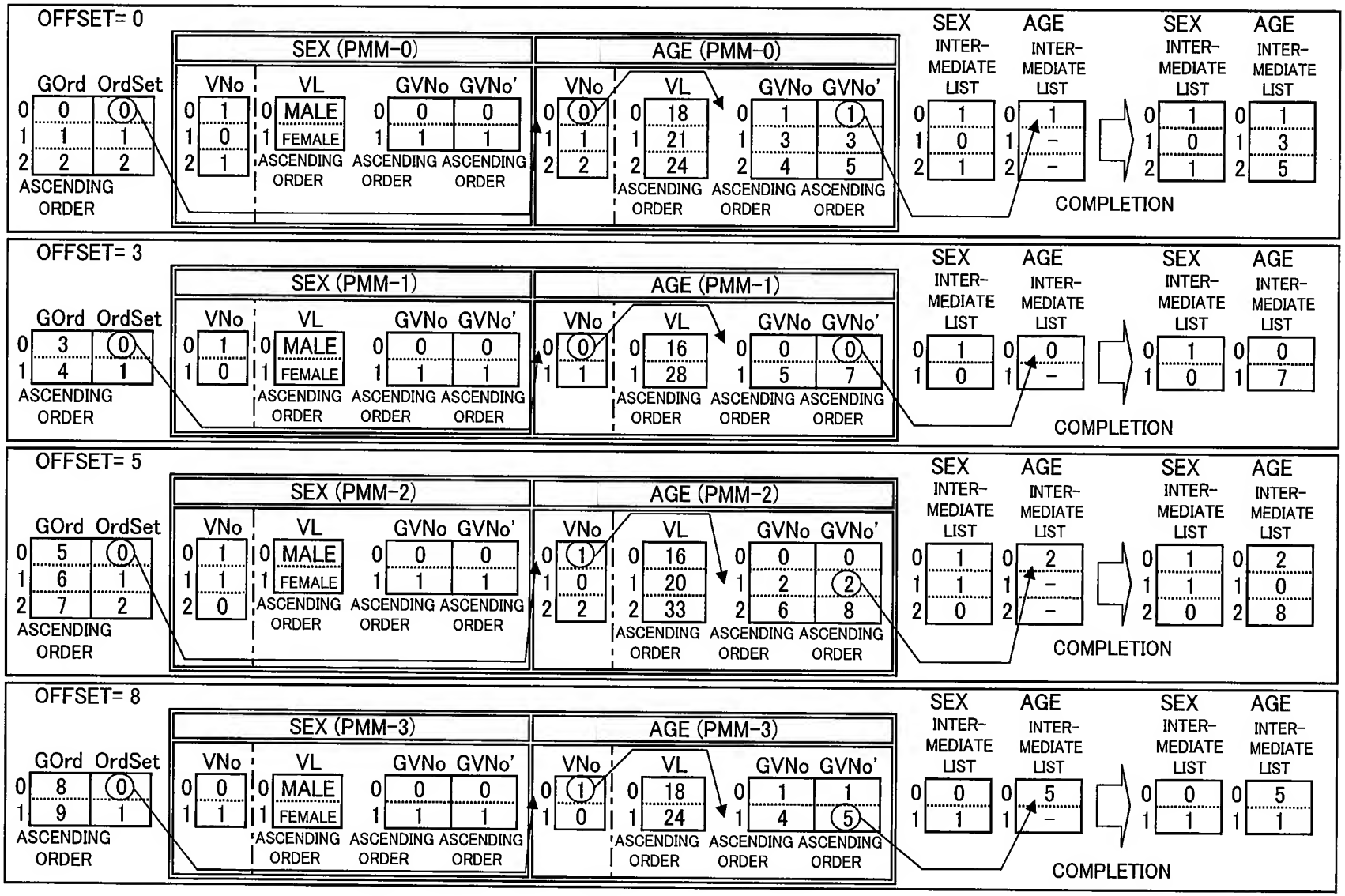

OFFSET= 0
SEX (PMM-0)
AGE (PMM-0)
GOrd OrdSet
VNo VL GVNo GVNo'
MALE
FEMALE
ASCENDING ORDER
SEX INTER-MEDIATE LIST
AGE INTER-MEDIATE LIST
COMPLETION
OFFSET= 3
SEX (PMM-1)
AGE (PMM-1)
OFFSET= 5
SEX (PMM-2)
AGE (PMM-2)
OFFSET= 8
SEX (PMM-3)
AGE (PMM-3)

Fig.64

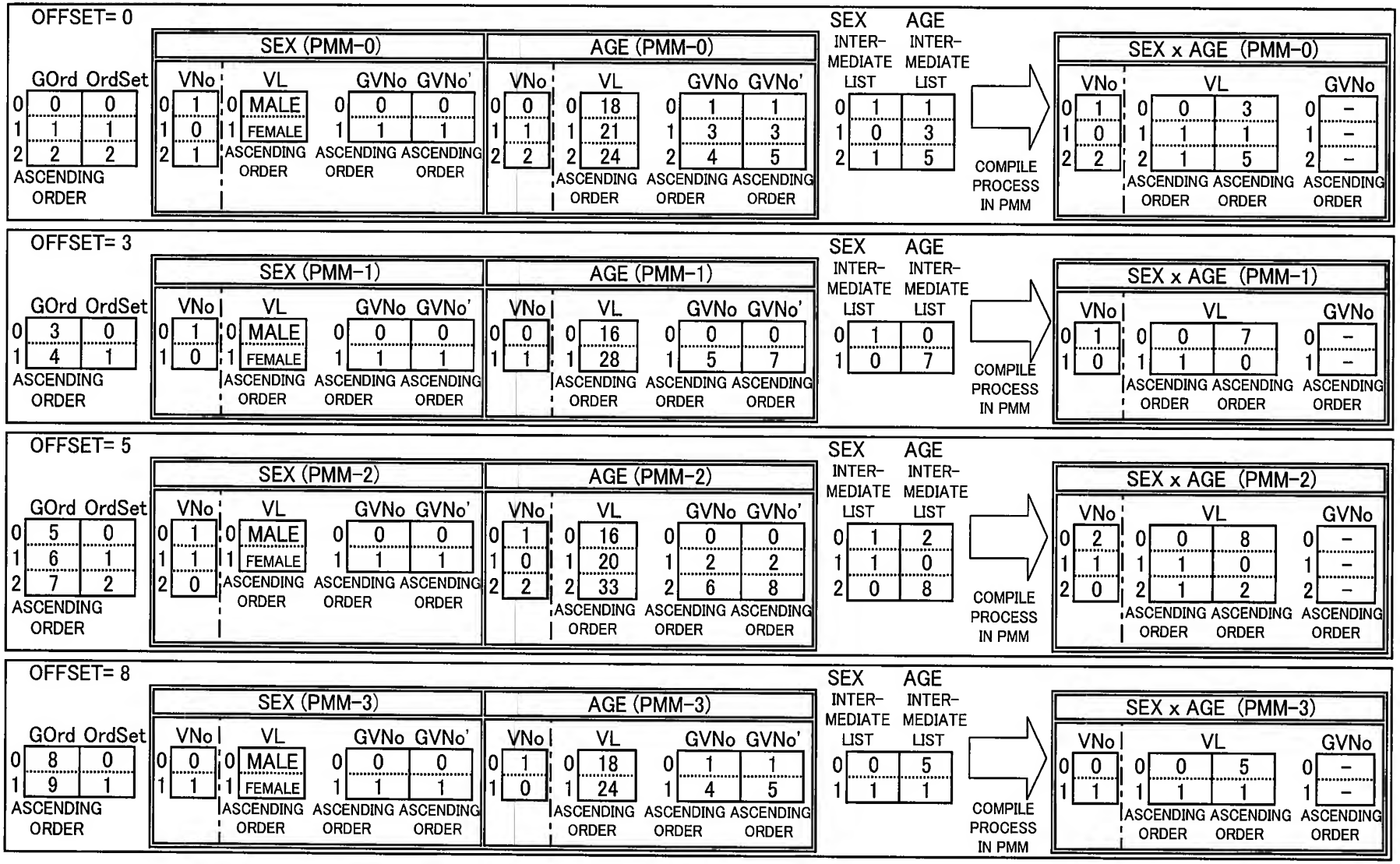
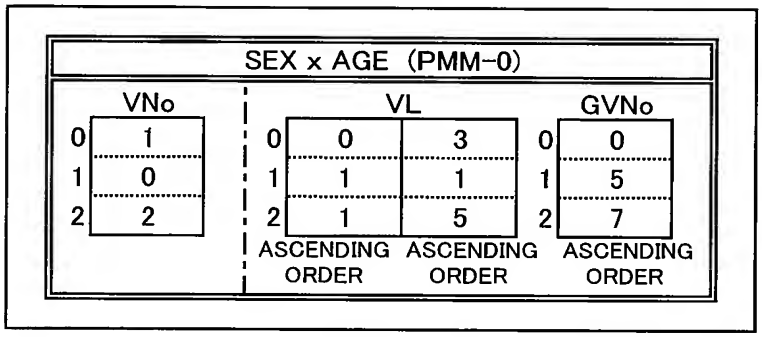
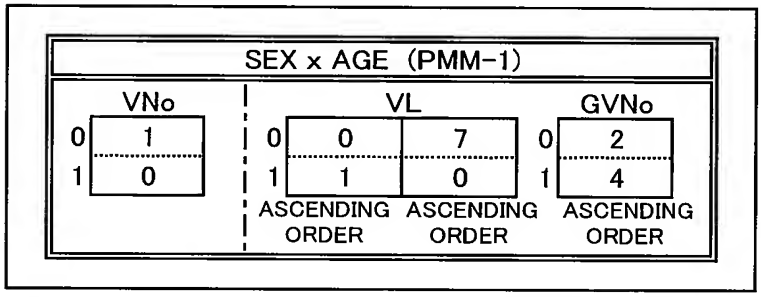
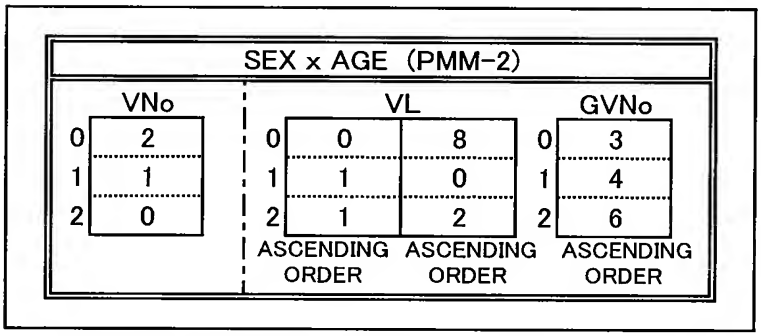

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SEX (PMM-0)
VNo
0 1
1 0
2 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo GVNo'
0 1 1
1 3 3
2 4 5
ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
0 1 1
1 0 3
2 1 5
AGE INTER-MEDIATE LIST
COMPILE PROCESS IN PMM
SEX x AGE (PMM-0)
VNo
0 1
1 0
2 2
VL
0 0 3
1 1 1
2 1 5
ASCENDING ORDER ASCENDING ORDER
GVNo
0 –
1 –
2 –
ASCENDING ORDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SEX (PMM-1)
VNo
0 1
1 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 5 7
ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
0 1 0
1 0 7
AGE INTER-MEDIATE LIST
COMPILE PROCESS IN PMM
SEX x AGE (PMM-1)
VNo
0 1
1 0
VL
0 0 7
1 1 0
ASCENDING ORDER ASCENDING ORDER
GVNo
0 –
1 –
ASCENDING ORDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SEX (PMM-2)
VNo
0 1
1 1
2 0
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 2 2
2 6 8
ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
0 1 2
1 1 0
2 0 8
AGE INTER-MEDIATE LIST
COMPILE PROCESS IN PMM
SEX x AGE (PMM-2)
VNo
0 2
1 1
2 0
VL
0 0 8
1 1 0
2 1 2
ASCENDING ORDER ASCENDING ORDER
GVNo
0 –
1 –
2 –
ASCENDING ORDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SEX (PMM-3)
VNo
0 0
1 1
VL
0 MALE
1 FEMALE
ASCENDING ORDER
GVNo GVNo'
0 0 0
1 1 1
ASCENDING ORDER ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo GVNo'
0 1 1
1 4 5
ASCENDING ORDER ASCENDING ORDER
SEX INTER-MEDIATE LIST
0 0 5
1 1 1
AGE INTER-MEDIATE LIST
COMPILE PROCESS IN PMM
SEX x AGE (PMM-3)
VNo
0 0
1 1
VL
0 0 5
1 1 1
ASCENDING ORDER ASCENDING ORDER
GVNo
0 –
1 –
ASCENDING ORDER

Fig.65


SEX x AGE (PMM-0)
VNo
0 1
1 0
2 2
VL
0 0 3
1 1 1
2 1 5
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 0
1 5
2 7
ASCENDING ORDER


SEX x AGE (PMM-1)
VNo
0 1
1 0
VL
0 0 7
1 1 0
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 2
1 4
ASCENDING ORDER


SEX x AGE (PMM-2)
VNo
0 2
1 1
2 0
VL
0 0 8
1 1 0
2 1 2
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 3
1 4
2 6
ASCENDING ORDER

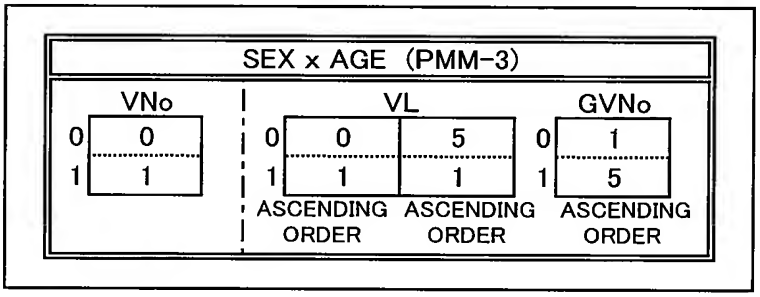

SEX x AGE (PMM-3)
VNo
0 0
1 1
VL
0 0 5
1 1 1
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 1
1 5
ASCENDING ORDER

Fig.66

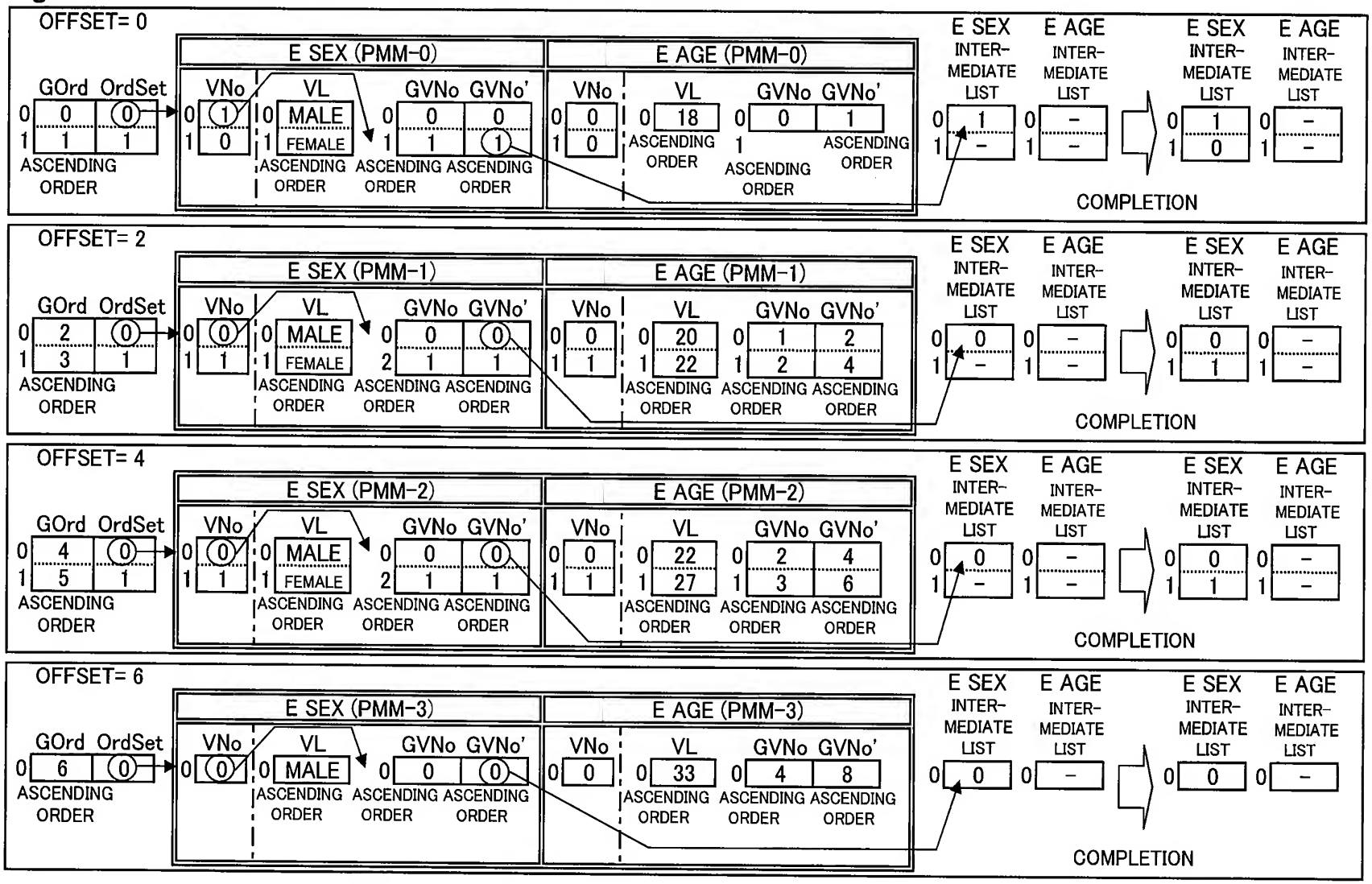

OFFSET= 0
E SEX (PMM-0)
E AGE (PMM-0)
GOrd OrdSet
VNo VL GVNo GVNo'
MALE
FEMALE
ASCENDING ORDER
E SEX INTER-MEDIATE LIST
E AGE INTER-MEDIATE LIST
COMPLETION
OFFSET= 2
E SEX (PMM-1)
E AGE (PMM-1)
OFFSET= 4
E SEX (PMM-2)
E AGE (PMM-2)
OFFSET= 6
E SEX (PMM-3)
E AGE (PMM-3)

Fig.67

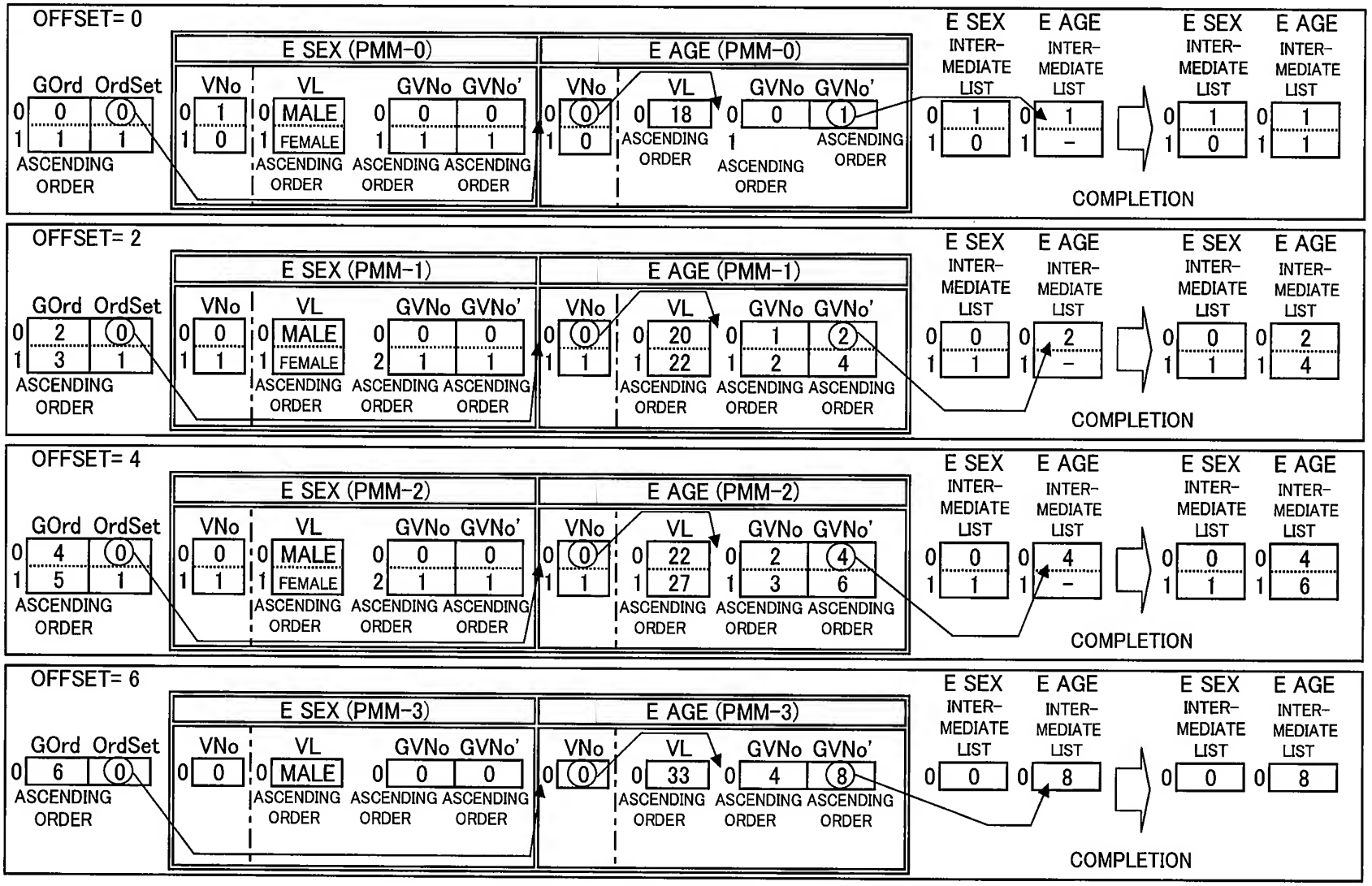

OFFSET= 0
E SEX (PMM-0)
E AGE (PMM-0)
GOrd OrdSet
VNo VL GVNo GVNo'
ASCENDING ORDER
MALE
FEMALE
E SEX INTER-MEDIATE LIST
E AGE INTER-MEDIATE LIST
COMPLETION
OFFSET= 2
E SEX (PMM-1)
E AGE (PMM-1)
OFFSET= 4
E SEX (PMM-2)
E AGE (PMM-2)
OFFSET= 6
E SEX (PMM-3)
E AGE (PMM-3)

Fig.68

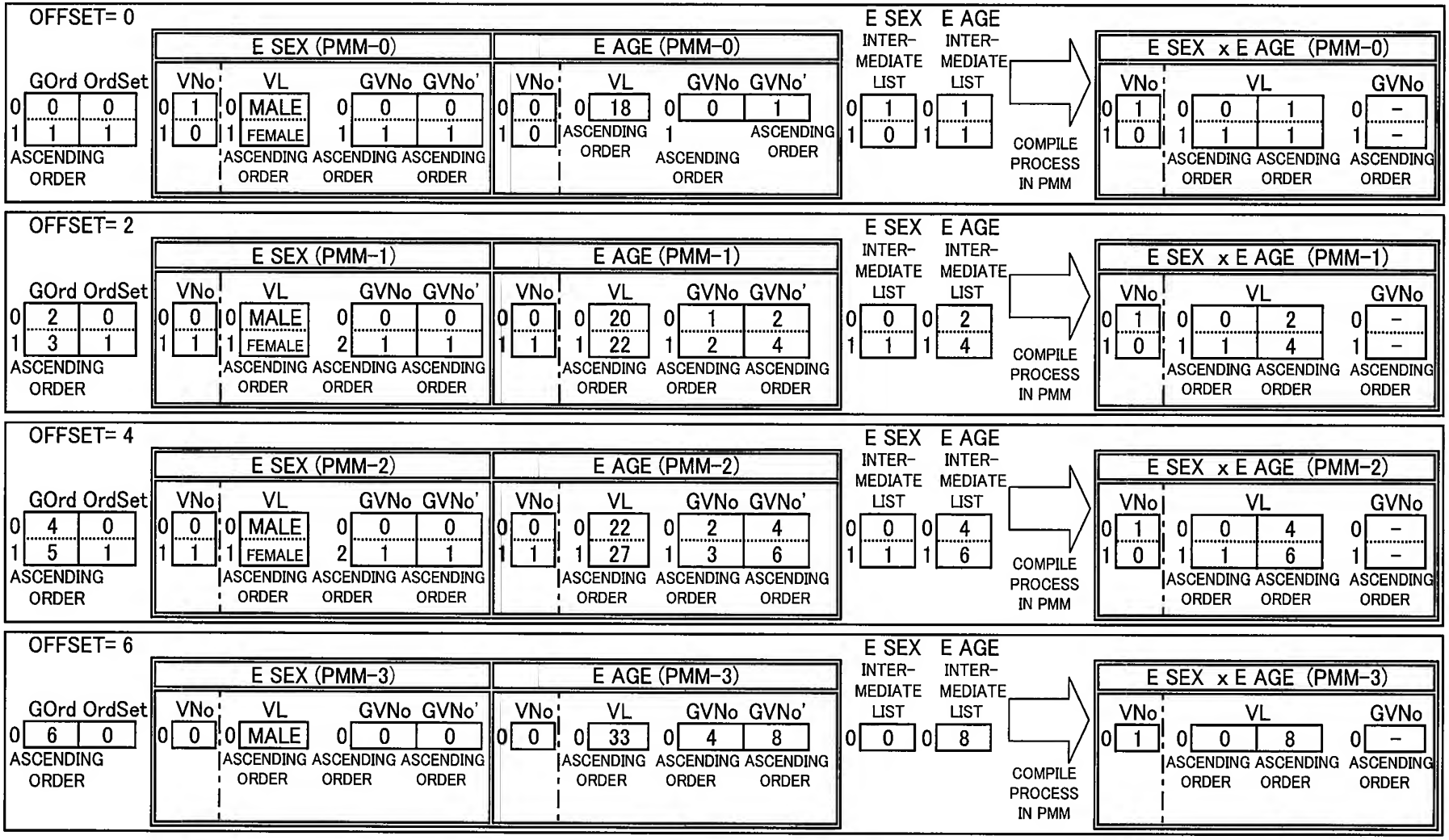
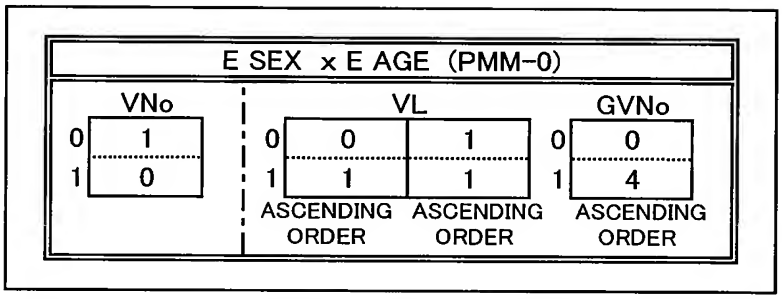
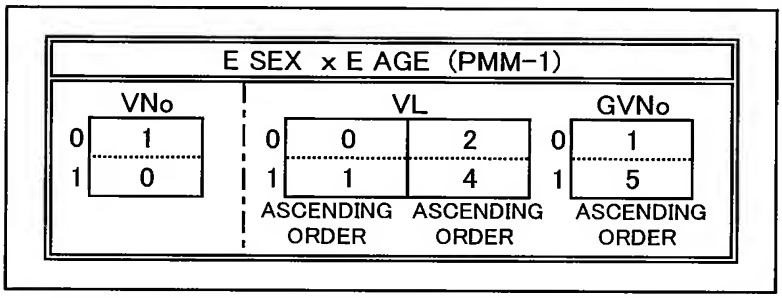
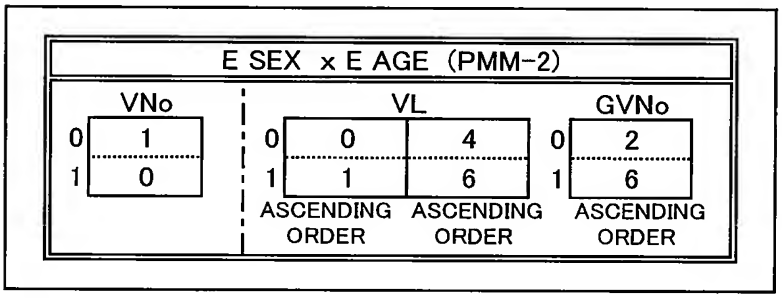

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
ASCENDING ORDER
E SEX (PMM-0)
VNo VL GVNo GVNo'
0 1 0 MALE 0 0 0
1 0 1 FEMALE 1 1 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-0)
VNo VL GVNo GVNo'
0 0 0 18 0 0 1
1 0 ASCENDING ORDER 1 ASCENDING ORDER ASCENDING ORDER
E SEX INTER-MEDIATE LIST
0 1
1 0
E AGE INTER-MEDIATE LIST
0 1
1 1
COMPILE PROCESS IN PMM
E SEX x E AGE (PMM-0)
VNo VL GVNo
0 1 0 0 1 0 -
1 0 1 1 1 1 -
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
OFFSET= 2
GOrd OrdSet
0 2 0
1 3 1
ASCENDING ORDER
E SEX (PMM-1)
VNo VL GVNo GVNo'
0 0 0 MALE 0 0 0
1 1 1 FEMALE 2 1 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-1)
VNo VL GVNo GVNo'
0 0 0 20 0 1 2
1 1 1 22 1 2 4
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E SEX INTER-MEDIATE LIST
0 0
1 1
E AGE INTER-MEDIATE LIST
0 2
1 4
COMPILE PROCESS IN PMM
E SEX x E AGE (PMM-1)
VNo VL GVNo
0 1 0 0 2 0 -
1 0 1 1 4 1 -
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
OFFSET= 4
GOrd OrdSet
0 4 0
1 5 1
ASCENDING ORDER
E SEX (PMM-2)
VNo VL GVNo GVNo'
0 0 0 MALE 0 0 0
1 1 1 FEMALE 2 1 1
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-2)
VNo VL GVNo GVNo'
0 0 0 22 0 2 4
1 1 1 27 1 3 6
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E SEX INTER-MEDIATE LIST
0 0
1 1
E AGE INTER-MEDIATE LIST
0 4
1 6
COMPILE PROCESS IN PMM
E SEX x E AGE (PMM-2)
VNo VL GVNo
0 1 0 0 4 0 -
1 0 1 1 6 1 -
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
OFFSET= 6
GOrd OrdSet
0 6 0
ASCENDING ORDER
E SEX (PMM-3)
VNo VL GVNo GVNo'
0 0 0 MALE 0 0 0
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E AGE (PMM-3)
VNo VL GVNo GVNo'
0 0 0 33 0 4 8
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER
E SEX INTER-MEDIATE LIST
0 0
E AGE INTER-MEDIATE LIST
0 8
COMPILE PROCESS IN PMM
E SEX x E AGE (PMM-3)
VNo VL GVNo
0 1 0 0 8 0 -
ASCENDING ORDER ASCENDING ORDER ASCENDING ORDER

Fig.69


E SEX x E AGE (PMM-0)
VNo
0 1
1 0
VL
0 0 1
1 1 1
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 0
1 4
ASCENDING ORDER


E SEX x E AGE (PMM-1)
VNo
0 1
1 0
VL
0 0 2
1 1 4
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 1
1 5
ASCENDING ORDER


E SEX x E AGE (PMM-2)
VNo
0 1
1 0
VL
0 0 4
1 1 6
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 2
1 6
ASCENDING ORDER

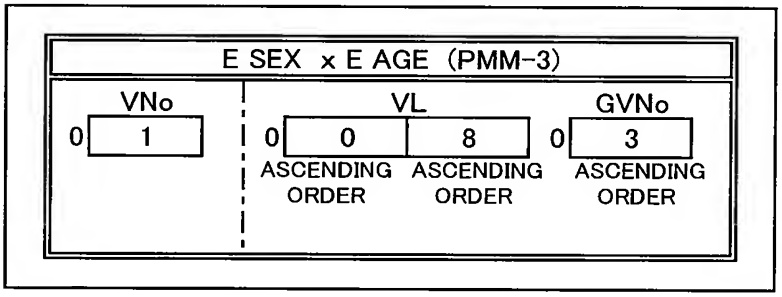

E SEX x E AGE (PMM-3)
VNo
0 1
VL
0 0 8
ASCENDING ORDER
ASCENDING ORDER
GVNo
0 3
ASCENDING ORDER

Fig.70

TABLE 1

	SEX	AGE	HEIGHT(cm)	WEIGHT(kg)
0	FEMALE	18	168	55
1	MALE	21	172	64
2	FEMALE	24	159	48
3	FEMALE	16	172	48
4	MALE	28	181	78
5	FEMALE	20	166	55
6	FEMALE	16	168	52
7	MALE	33	174	65
8	MALE	24	177	64
9	FEMALE	18	170	55

LEFT-JOIN

AGE × E AGE

TABLE 2

	E AGE	EVENT
0	18	H2
1	18	C1
2	20	A
3	22	C2
4	22	P1
5	27	P2
6	33	M

GENERATED JOIN TABLE

		SEX	AGE	HEIGHT(cm)	WEIGHT(kg)		E AGE	EVENT
0	0	FEMALE	18	168	55	0	18	H2
1	0	FEMALE	18	168	55	1	18	C1
2	1	MALE	21	172	64		–	–
3	2	FEMALE	24	159	48		–	–
4	3	FEMALE	16	172	48		–	–
5	4	MALE	28	181	78		–	–
6	5	FEMALE	20	166	55	2	20	A
7	6	FEMALE	16	168	52		–	–
8	7	MALE	33	174	65	6	33	M
9	8	MALE	24	177	64		–	–
10	9	FEMALE	18	170	55	0	18	H2
11	9	FEMALE	18	170	55	1	18	C1

Fig.71

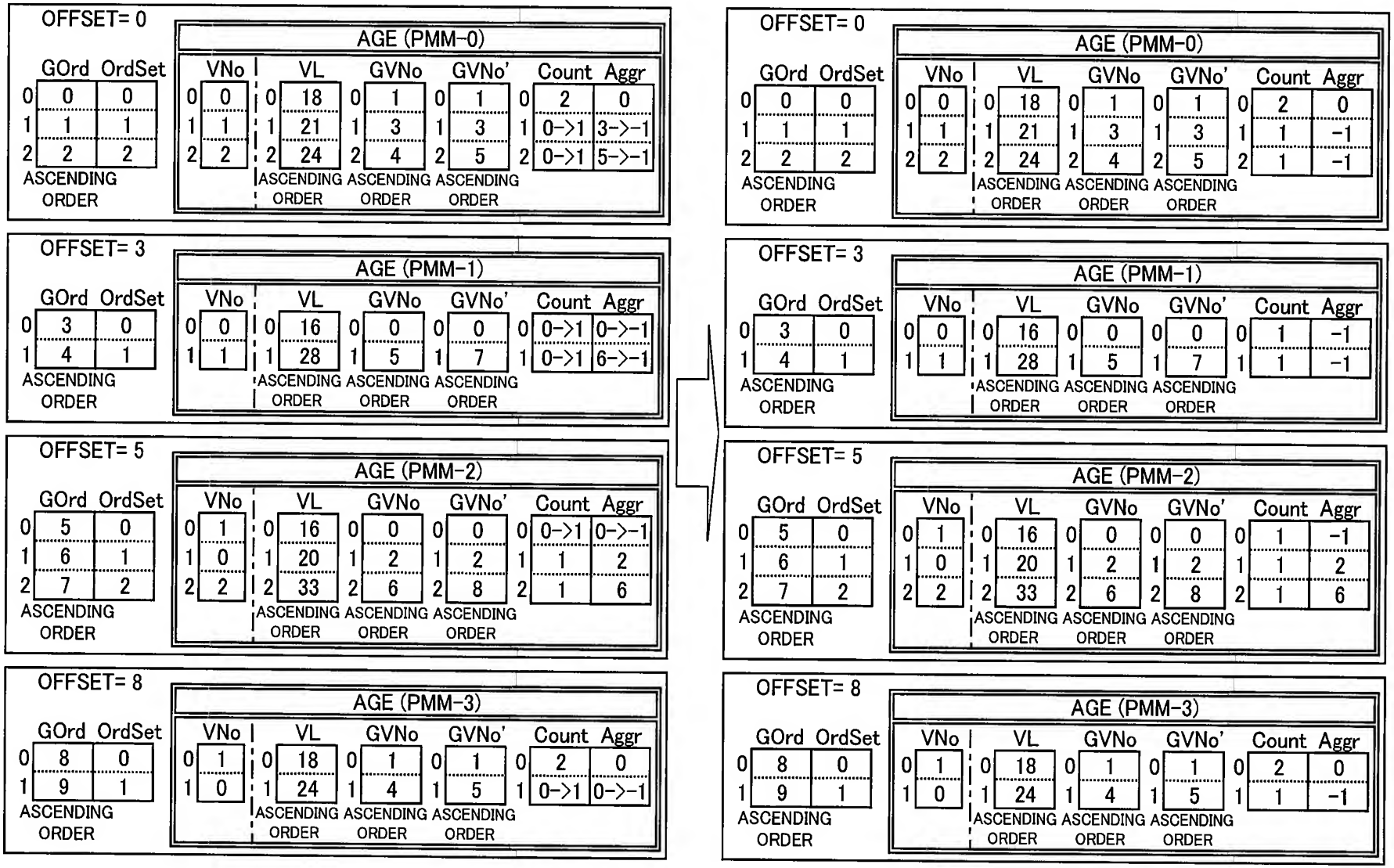

OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo 0 0 1 1 2 2
VL 0 18 1 21 2 24
GVNo 0 1 1 3 2 4
GVNo' 0 1 1 3 2 5
Count Aggr 0 2 0 1 0->1 3->-1 2 0->1 5->-1
ASCENDING ORDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo 0 0 1 1
VL 0 16 1 28
GVNo 0 0 1 5
GVNo' 0 0 1 7
Count Aggr 0 0->1 0->-1 1 0->1 6->-1
ASCENDING ORDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo 0 1 1 0 2 2
VL 0 16 1 20 2 33
GVNo 0 0 1 2 2 6
GVNo' 0 0 1 2 2 8
Count Aggr 0 0->1 0->-1 1 1 2 2 1 6
ASCENDING ORDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo 0 1 1 0
VL 0 18 1 24
GVNo 0 1 1 4
GVNo' 0 1 1 5
Count Aggr 0 2 0 1 0->1 0->-1
ASCENDING ORDER
OFFSET= 0
GOrd OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo 0 0 1 1 2 2
VL 0 18 1 21 2 24
GVNo 0 1 1 3 2 4
GVNo' 0 1 1 3 2 5
Count Aggr 0 2 0 1 -1 1 1 -1
ASCENDING ORDER
OFFSET= 3
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo 0 0 1 1
VL 0 16 1 28
GVNo 0 0 1 5
GVNo' 0 0 1 7
Count Aggr 0 1 -1 1 1 -1
ASCENDING ORDER
OFFSET= 5
GOrd OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo 0 1 1 0 2 2
VL 0 16 1 20 2 33
GVNo 0 0 1 2 2 6
GVNo' 0 0 1 2 2 8
Count Aggr 0 1 -1 1 1 2 2 1 6
ASCENDING ORDER
OFFSET= 8
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo 0 1 1 0
VL 0 18 1 24
GVNo 0 1 1 4
GVNo' 0 1 1 5
Count Aggr 0 2 0 1 -1
ASCENDING ORDER

Fig.72

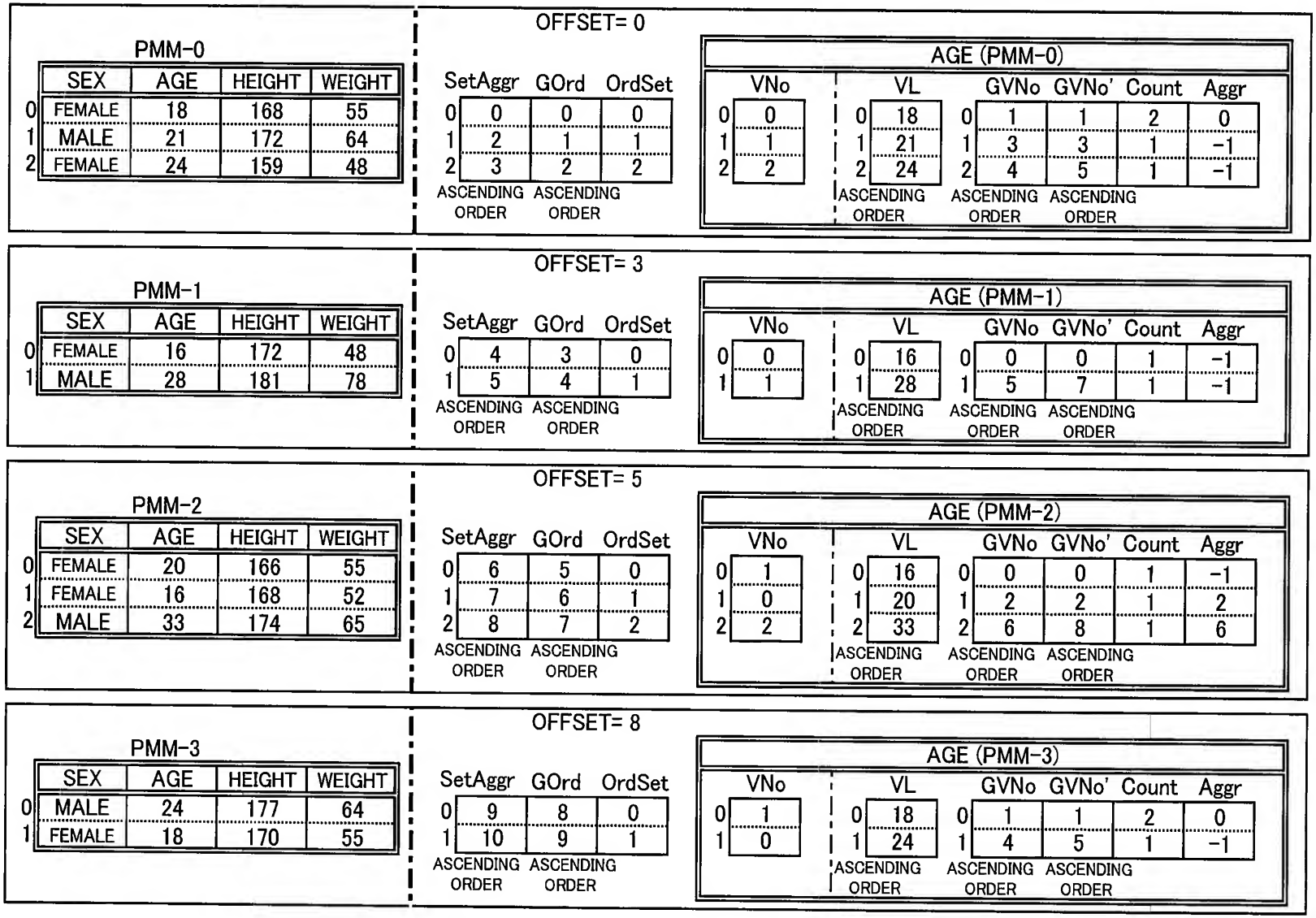

PMM-0
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
1 MALE 21 172 64
2 FEMALE 24 159 48
OFFSET= 0
SetAggr GOrd OrdSet
0 0 0 0
1 2 1 1
2 3 2 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 1 1 2 0
1 3 3 1 -1
2 4 5 1 -1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-1
SEX AGE HEIGHT WEIGHT
0 FEMALE 16 172 48
1 MALE 28 181 78
OFFSET= 3
SetAggr GOrd OrdSet
0 4 3 0
1 5 4 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 0 0 1 -1
1 5 7 1 -1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-2
SEX AGE HEIGHT WEIGHT
0 FEMALE 20 166 55
1 FEMALE 16 168 52
2 MALE 33 174 65
OFFSET= 5
SetAggr GOrd OrdSet
0 6 5 0
1 7 6 1
2 8 7 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 0 0 1 -1
1 2 2 1 2
2 6 8 1 6
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-3
SEX AGE HEIGHT WEIGHT
0 MALE 24 177 64
1 FEMALE 18 170 55
OFFSET= 8
SetAggr GOrd OrdSet
0 9 8 0
1 10 9 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 1 1 2 0
1 4 5 1 -1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER

Fig.73

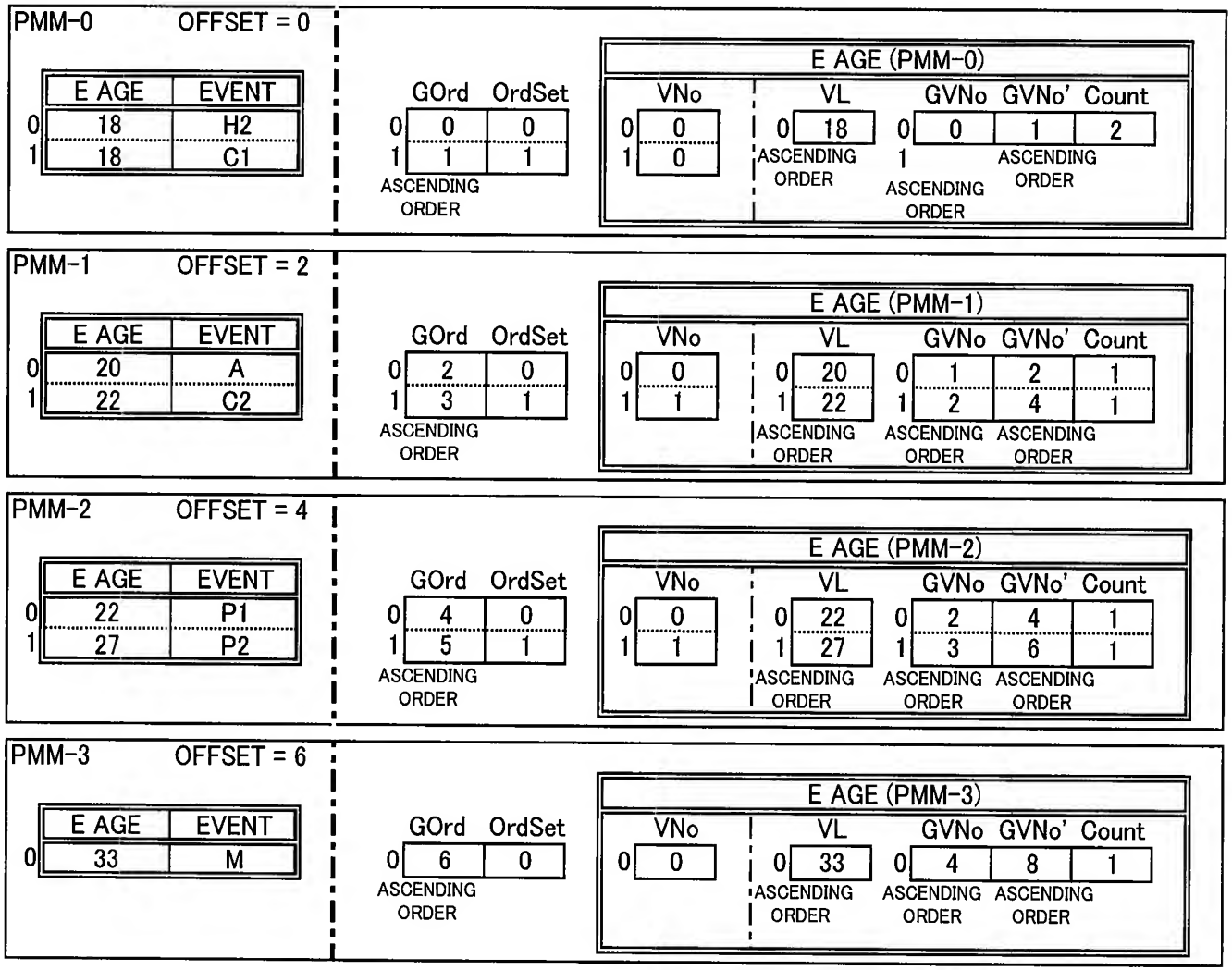

PMM-0
OFFSET = 0
E AGE
EVENT
0
18
H2
1
18
C1
GOrd
OrdSet
0
0
0
1
1
1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0
0
1
0
VL
0
18
ASCENDING ORDER
GVNo
GVNo'
Count
0
0
1
2
1
ASCENDING ORDER
ASCENDING ORDER
PMM-1
OFFSET = 2
E AGE
EVENT
0
20
A
1
22
C2
GOrd
OrdSet
0
2
0
1
3
1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0
0
1
1
VL
0
20
1
22
ASCENDING ORDER
GVNo
GVNo'
Count
0
1
2
1
1
2
4
1
ASCENDING ORDER
ASCENDING ORDER
PMM-2
OFFSET = 4
E AGE
EVENT
0
22
P1
1
27
P2
GOrd
OrdSet
0
4
0
1
5
1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0
0
1
1
VL
0
22
1
27
ASCENDING ORDER
GVNo
GVNo'
Count
0
2
4
1
1
3
6
1
ASCENDING ORDER
ASCENDING ORDER
PMM-3
OFFSET = 6
E AGE
EVENT
0
33
M
GOrd
OrdSet
0
6
0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0
0
VL
0
33
ASCENDING ORDER
GVNo
GVNo'
Count
0
4
8
1
ASCENDING ORDER
ASCENDING ORDER

Fig.74

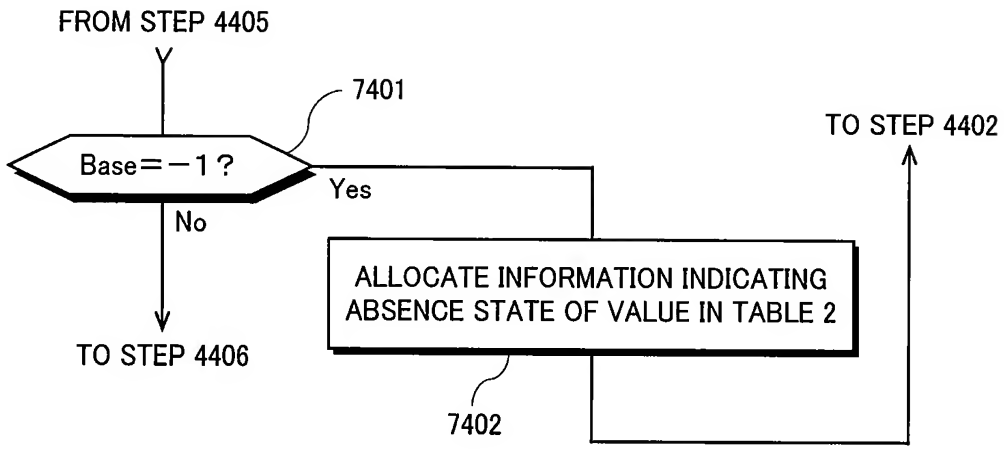

FROM STEP 4405
7401
Base=−1?
Yes
No
TO STEP 4406
ALLOCATE INFORMATION INDICATING ABSENCE STATE OF VALUE IN TABLE 2
7402
TO STEP 4402

Fig.75

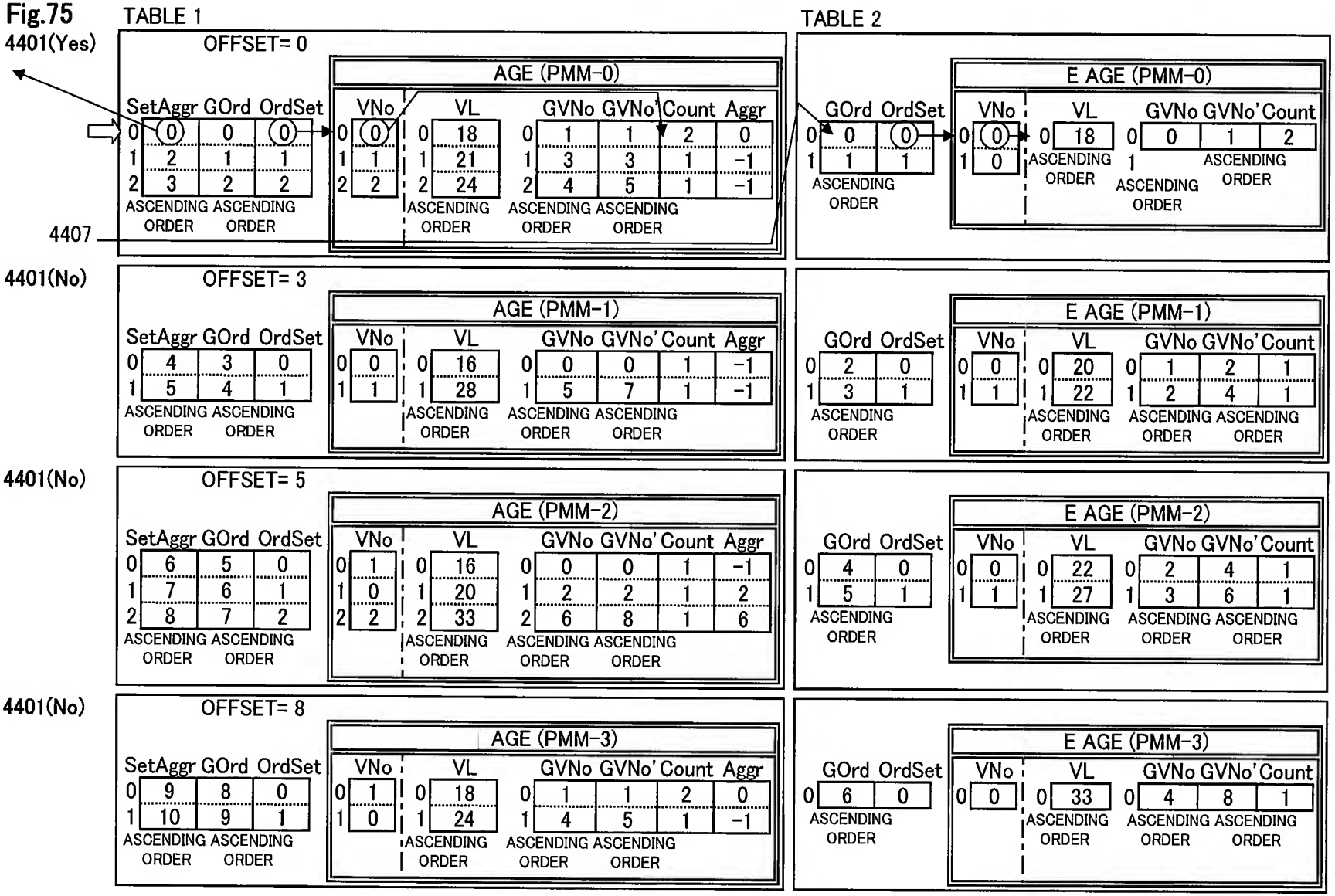


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
AGE (PMM-0)
E AGE (PMM-0)
SetAggr GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
GOrd OrdSet
VNo VL GVNo GVNo' Count
4407
4401(No)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4401(No)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4401(No)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)
ASCENDING ORDER

Fig.76

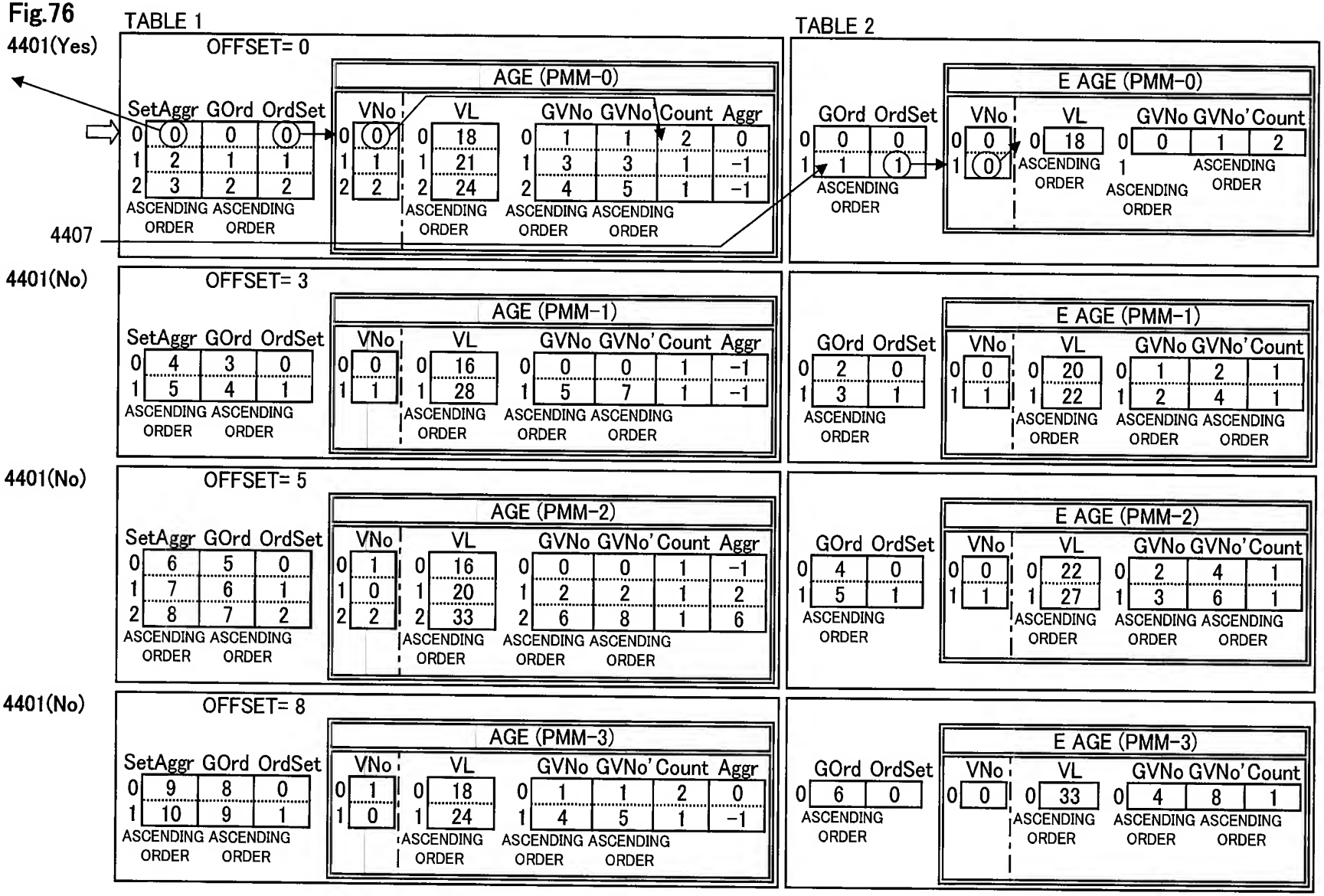


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
AGE (PMM-0)
E AGE (PMM-0)
SetAggr GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
GOrd OrdSet
VNo VL GVNo GVNo' Count
4407
4401(No)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4401(No)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4401(No)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)
ASCENDING ORDER

Fig.77

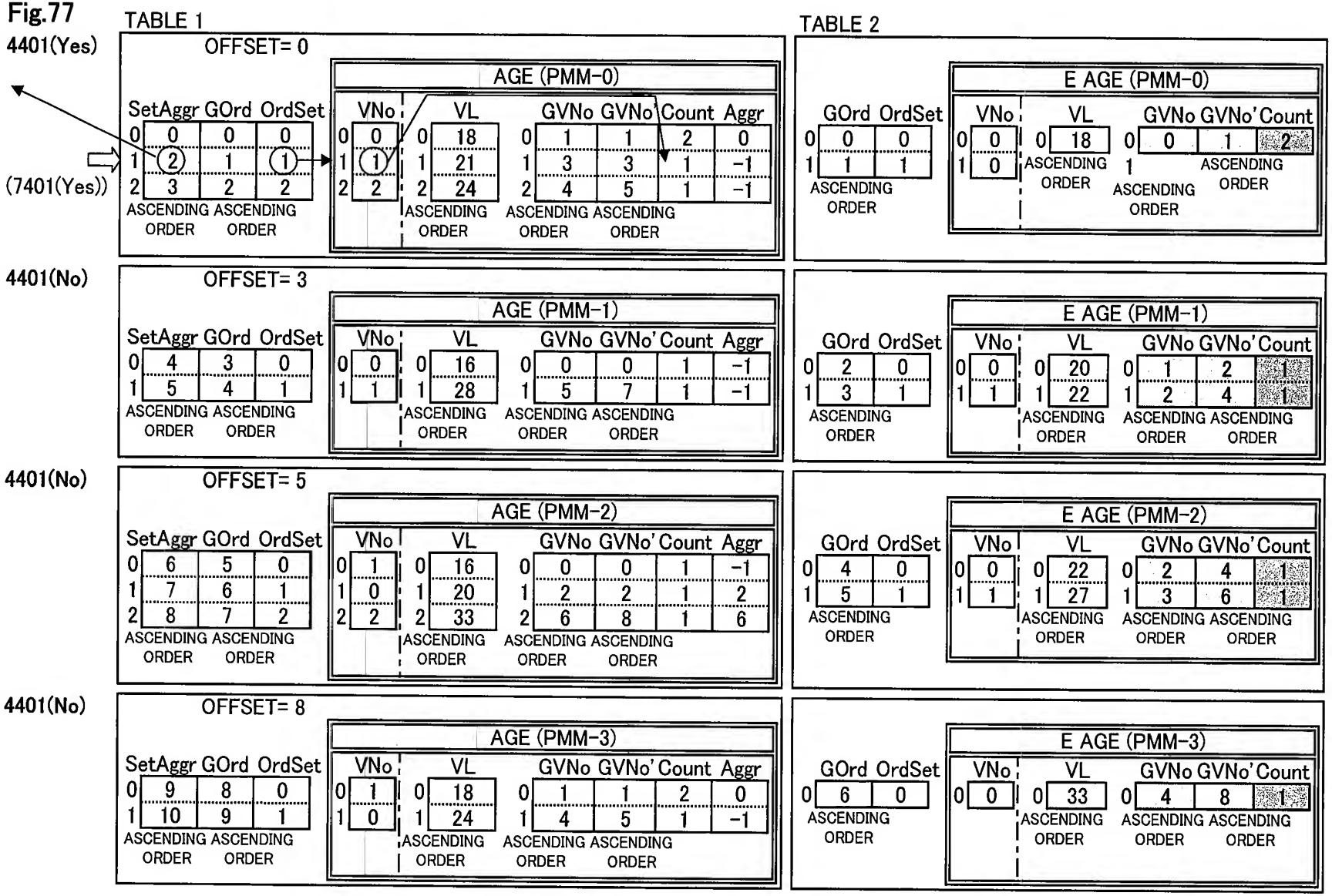


TABLE 1
TABLE 2
4401(Yes)
OFFSET= 0
AGE (PMM-0)
E AGE (PMM-0)
SetAggr GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
GOrd OrdSet
VNo VL GVNo GVNo' Count
(7401(Yes))
4401(No)
OFFSET= 3
AGE (PMM-1)
E AGE (PMM-1)
4401(No)
OFFSET= 5
AGE (PMM-2)
E AGE (PMM-2)
4401(No)
OFFSET= 8
AGE (PMM-3)
E AGE (PMM-3)
ASCENDING ORDER

Fig.78

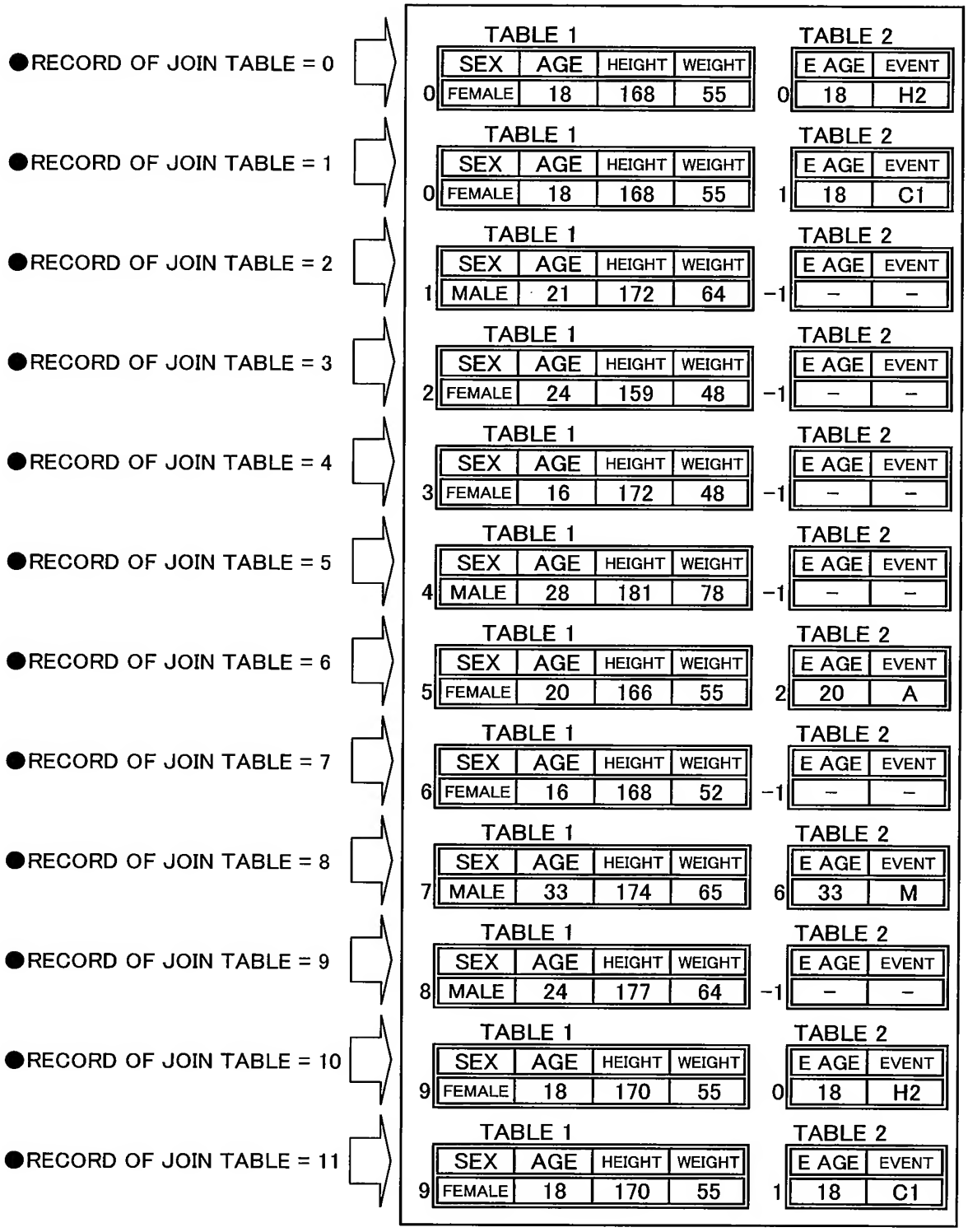

●RECORD OF JOIN TABLE = 0
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 1
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
1 18 C1
●RECORD OF JOIN TABLE = 2
TABLE 1
SEX AGE HEIGHT WEIGHT
1 MALE 21 172 64
TABLE 2
E AGE EVENT
-1 – –
●RECORD OF JOIN TABLE = 3
TABLE 1
SEX AGE HEIGHT WEIGHT
2 FEMALE 24 159 48
TABLE 2
E AGE EVENT
-1 – –
●RECORD OF JOIN TABLE = 4
TABLE 1
SEX AGE HEIGHT WEIGHT
3 FEMALE 16 172 48
TABLE 2
E AGE EVENT
-1 – –
●RECORD OF JOIN TABLE = 5
TABLE 1
SEX AGE HEIGHT WEIGHT
4 MALE 28 181 78
TABLE 2
E AGE EVENT
-1 – –
●RECORD OF JOIN TABLE = 6
TABLE 1
SEX AGE HEIGHT WEIGHT
5 FEMALE 20 166 55
TABLE 2
E AGE EVENT
2 20 A
●RECORD OF JOIN TABLE = 7
TABLE 1
SEX AGE HEIGHT WEIGHT
6 FEMALE 16 168 52
TABLE 2
E AGE EVENT
-1 – –
●RECORD OF JOIN TABLE = 8
TABLE 1
SEX AGE HEIGHT WEIGHT
7 MALE 33 174 65
TABLE 2
E AGE EVENT
6 33 M
●RECORD OF JOIN TABLE = 9
TABLE 1
SEX AGE HEIGHT WEIGHT
8 MALE 24 177 64
TABLE 2
E AGE EVENT
-1 – –
●RECORD OF JOIN TABLE = 10
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 11
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
1 18 C1

Fig.79

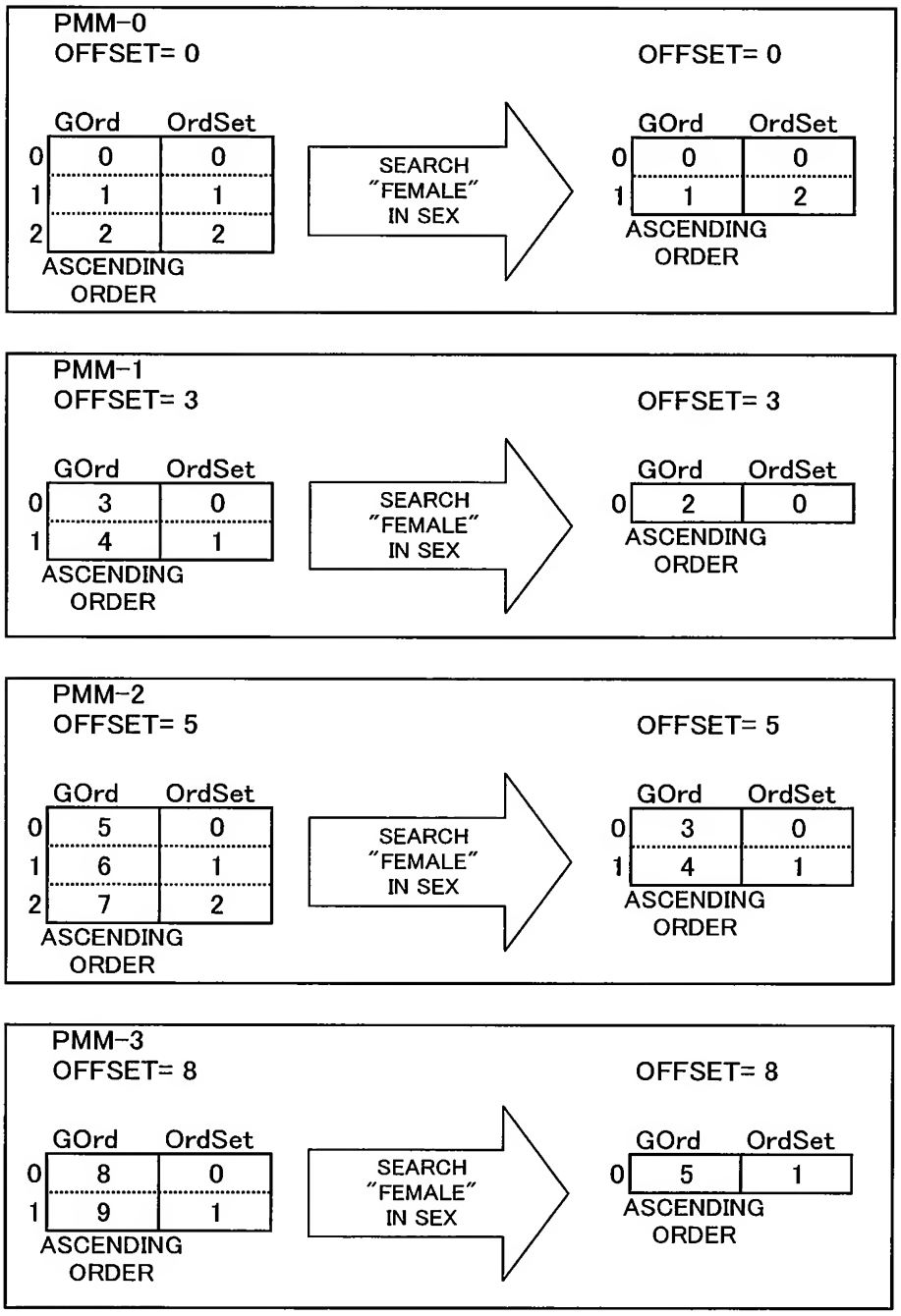

PMM-0
OFFSET= 0
GOrd
OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SEARCH "FEMALE" IN SEX
OFFSET= 0
GOrd
OrdSet
0 0 0
1 1 2
ASCENDING ORDER
PMM-1
OFFSET= 3
GOrd
OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SEARCH "FEMALE" IN SEX
OFFSET= 3
GOrd
OrdSet
0 2 0
ASCENDING ORDER
PMM-2
OFFSET= 5
GOrd
OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SEARCH "FEMALE" IN SEX
OFFSET= 5
GOrd
OrdSet
0 3 0
1 4 1
ASCENDING ORDER
PMM-3
OFFSET= 8
GOrd
OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SEARCH "FEMALE" IN SEX
OFFSET= 8
GOrd
OrdSet
0 5 1
ASCENDING ORDER

Fig.80

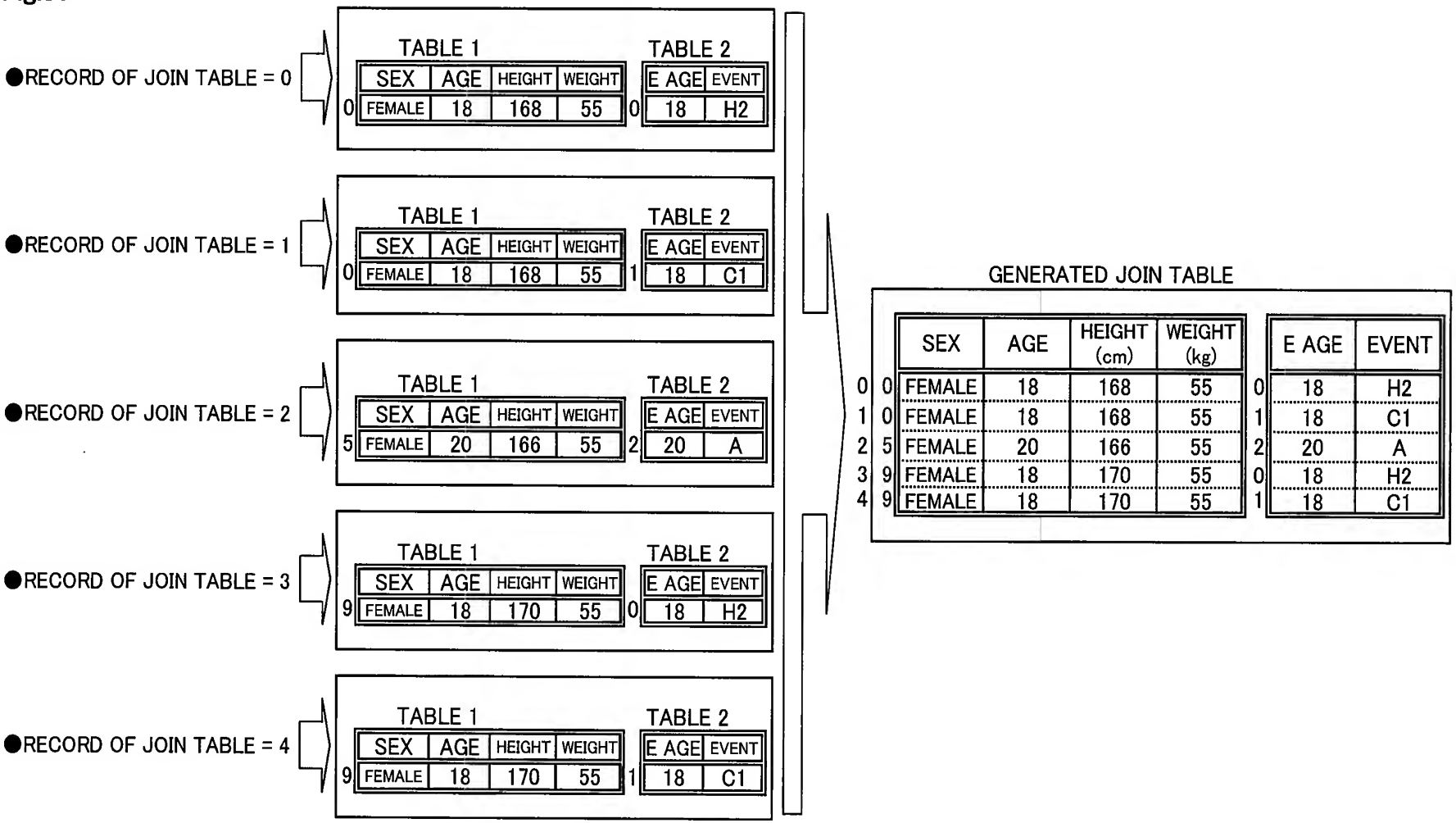

●RECORD OF JOIN TABLE = 0
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 1
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
1 18 C1
●RECORD OF JOIN TABLE = 2
TABLE 1
SEX AGE HEIGHT WEIGHT
5 FEMALE 20 166 55
TABLE 2
E AGE EVENT
2 20 A
●RECORD OF JOIN TABLE = 3
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 4
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
1 18 C1
GENERATED JOIN TABLE
SEX AGE HEIGHT (cm) WEIGHT (kg) E AGE EVENT
0 0 FEMALE 18 168 55 0 18 H2
1 0 FEMALE 18 168 55 1 18 C1
2 5 FEMALE 20 166 55 2 20 A
3 9 FEMALE 18 170 55 0 18 H2
4 9 FEMALE 18 170 55 1 18 C1

Fig.81

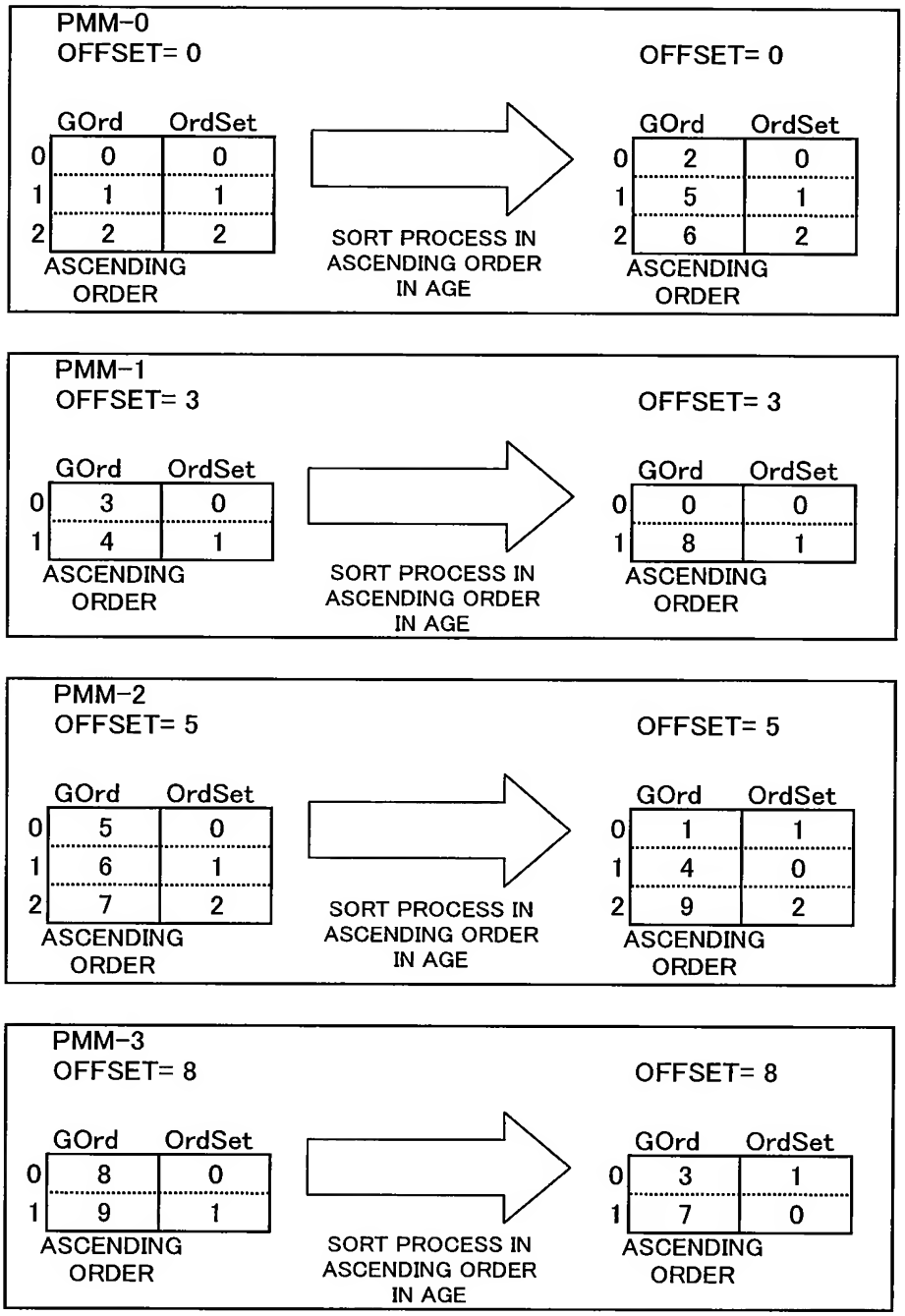

PMM-0
OFFSET= 0
GOrd
OrdSet
0 0 0
1 1 1
2 2 2
ASCENDING ORDER
SORT PROCESS IN ASCENDING ORDER IN AGE
OFFSET= 0
GOrd
OrdSet
0 2 0
1 5 1
2 6 2
ASCENDING ORDER
PMM-1
OFFSET= 3
GOrd
OrdSet
0 3 0
1 4 1
ASCENDING ORDER
SORT PROCESS IN ASCENDING ORDER IN AGE
OFFSET= 3
GOrd
OrdSet
0 0 0
1 8 1
ASCENDING ORDER
PMM-2
OFFSET= 5
GOrd
OrdSet
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
SORT PROCESS IN ASCENDING ORDER IN AGE
OFFSET= 5
GOrd
OrdSet
0 1 1
1 4 0
2 9 2
ASCENDING ORDER
PMM-3
OFFSET= 8
GOrd
OrdSet
0 8 0
1 9 1
ASCENDING ORDER
SORT PROCESS IN ASCENDING ORDER IN AGE
OFFSET= 8
GOrd
OrdSet
0 3 1
1 7 0
ASCENDING ORDER

Fig.82

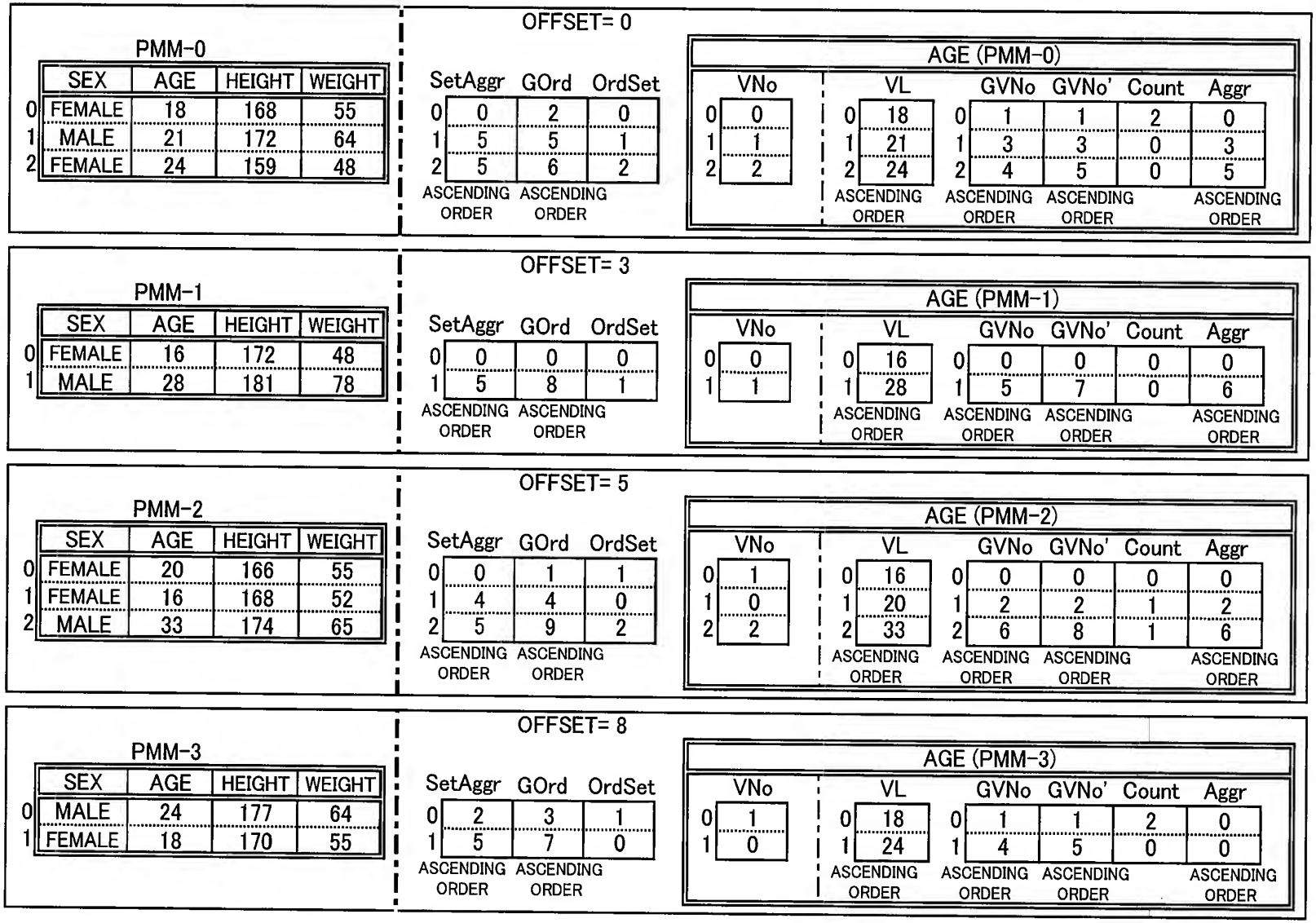

PMM-0
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
1 MALE 21 172 64
2 FEMALE 24 159 48
OFFSET= 0
SetAggr GOrd OrdSet
0 0 2 0
1 5 5 1
2 5 6 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 1 1 2 0
1 3 3 0 3
2 4 5 0 5
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-1
SEX AGE HEIGHT WEIGHT
0 FEMALE 16 172 48
1 MALE 28 181 78
OFFSET= 3
SetAggr GOrd OrdSet
0 0 0 0
1 5 8 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 0 0 0 0
1 5 7 0 6
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-2
SEX AGE HEIGHT WEIGHT
0 FEMALE 20 166 55
1 FEMALE 16 168 52
2 MALE 33 174 65
OFFSET= 5
SetAggr GOrd OrdSet
0 0 1 1
1 4 4 0
2 5 9 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 0 0 0 0
1 2 2 1 2
2 6 8 1 6
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-3
SEX AGE HEIGHT WEIGHT
0 MALE 24 177 64
1 FEMALE 18 170 55
OFFSET= 8
SetAggr GOrd OrdSet
0 2 3 1
1 5 7 0
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo GVNo' Count Aggr
0 1 1 2 0
1 4 5 0 0
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER

Fig.83

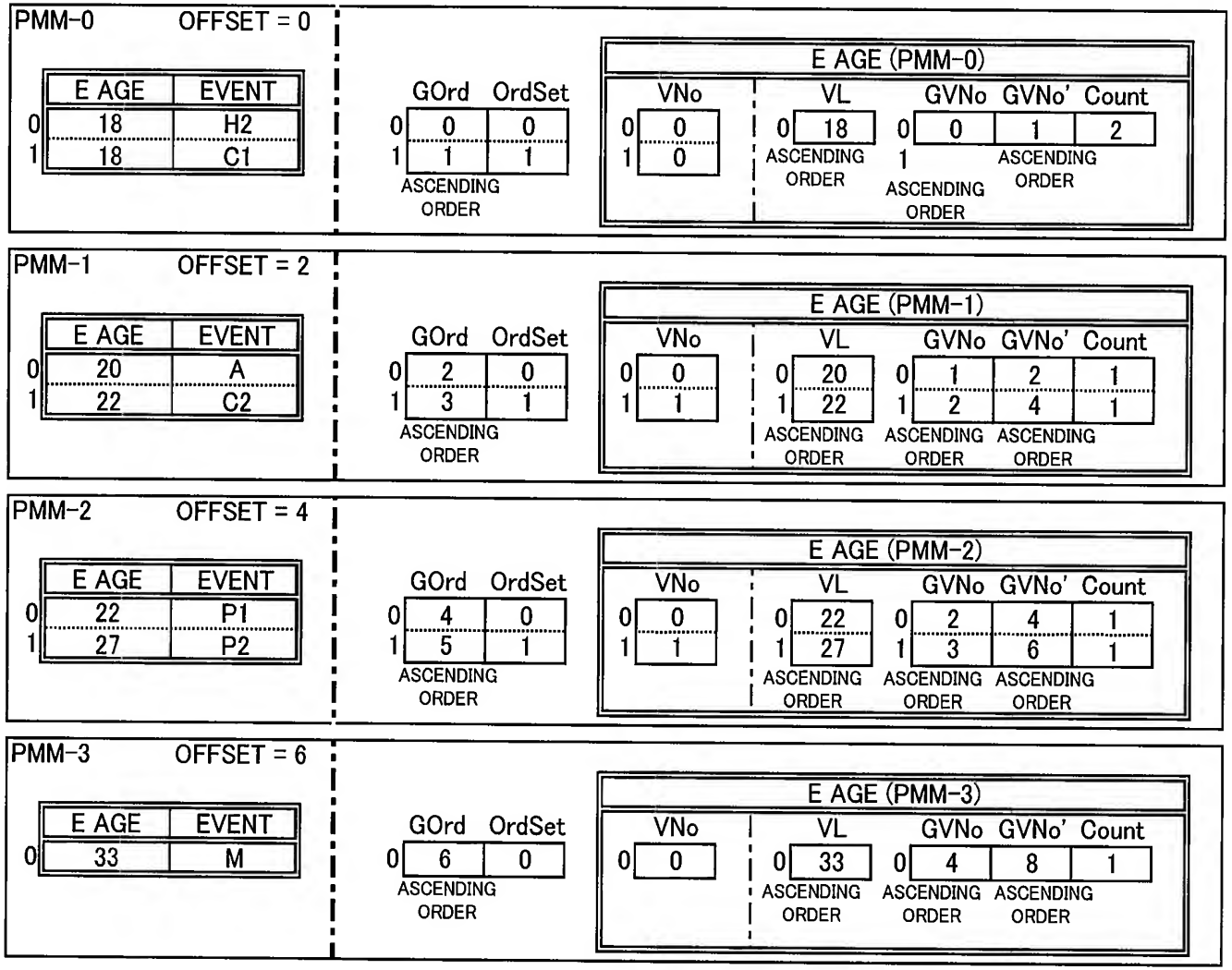

PMM-0
OFFSET = 0
E AGE
EVENT
0
18
H2
1
18
C1
GOrd
OrdSet
0
0
0
1
1
1
ASCENDING ORDER
E AGE (PMM-0)
VNo
0
0
1
0
VL
0
18
ASCENDING ORDER
GVNo
GVNo'
Count
0
0
1
2
1
ASCENDING ORDER
ASCENDING ORDER
PMM-1
OFFSET = 2
E AGE
EVENT
0
20
A
1
22
C2
GOrd
OrdSet
0
2
0
1
3
1
ASCENDING ORDER
E AGE (PMM-1)
VNo
0
0
1
1
VL
0
20
1
22
ASCENDING ORDER
GVNo
GVNo'
Count
0
1
2
1
1
2
4
1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-2
OFFSET = 4
E AGE
EVENT
0
22
P1
1
27
P2
GOrd
OrdSet
0
4
0
1
5
1
ASCENDING ORDER
E AGE (PMM-2)
VNo
0
0
1
1
VL
0
22
1
27
ASCENDING ORDER
GVNo
GVNo'
Count
0
2
4
1
1
3
6
1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER
PMM-3
OFFSET = 6
E AGE
EVENT
0
33
M
GOrd
OrdSet
0
6
0
ASCENDING ORDER
E AGE (PMM-3)
VNo
0
0
VL
0
33
ASCENDING ORDER
GVNo
GVNo'
Count
0
4
8
1
ASCENDING ORDER
ASCENDING ORDER
ASCENDING ORDER

Fig.84

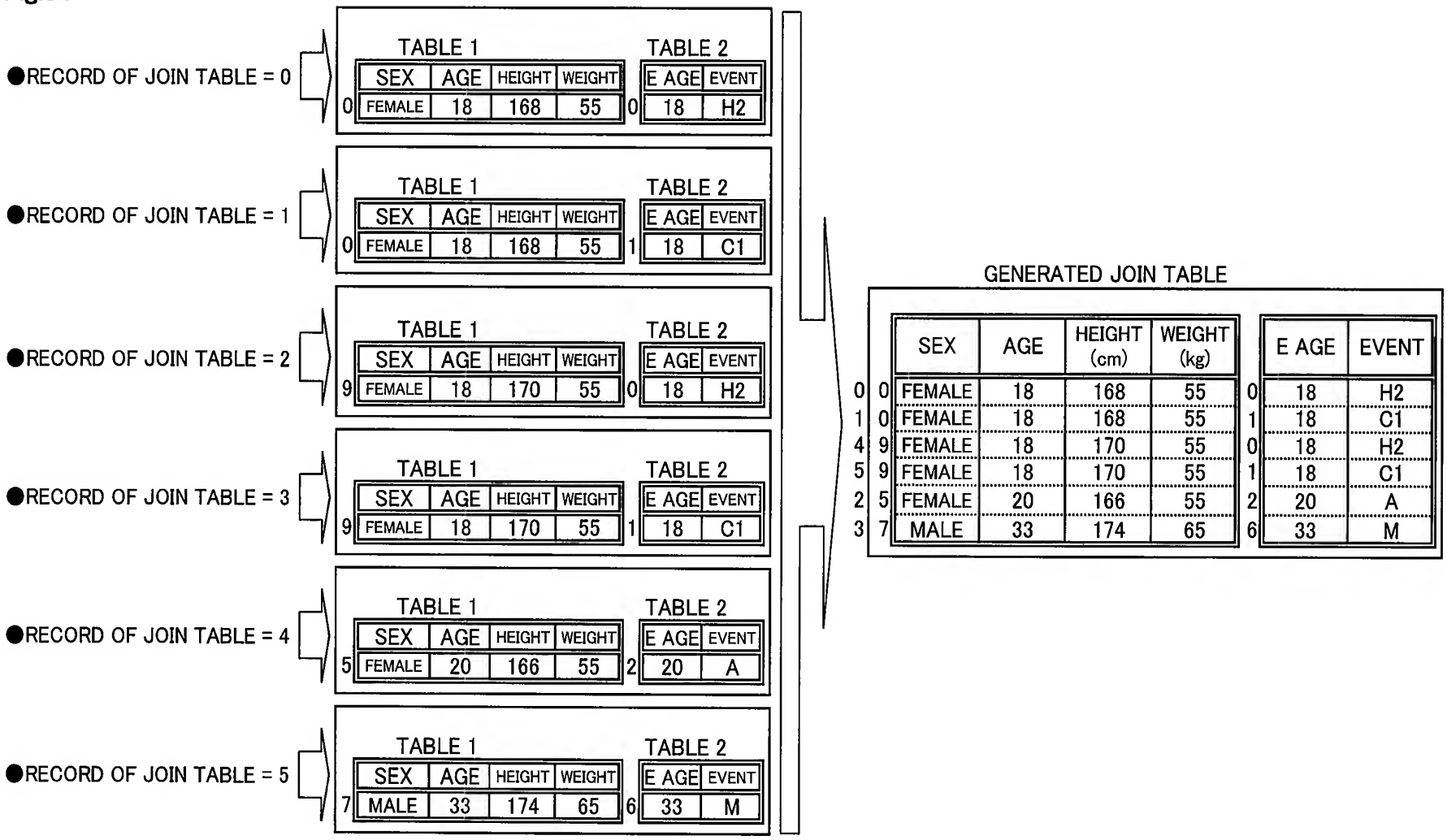

●RECORD OF JOIN TABLE = 0
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 1
TABLE 1
SEX AGE HEIGHT WEIGHT
0 FEMALE 18 168 55
TABLE 2
E AGE EVENT
1 18 C1
●RECORD OF JOIN TABLE = 2
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
0 18 H2
●RECORD OF JOIN TABLE = 3
TABLE 1
SEX AGE HEIGHT WEIGHT
9 FEMALE 18 170 55
TABLE 2
E AGE EVENT
1 18 C1
●RECORD OF JOIN TABLE = 4
TABLE 1
SEX AGE HEIGHT WEIGHT
5 FEMALE 20 166 55
TABLE 2
E AGE EVENT
2 20 A
●RECORD OF JOIN TABLE = 5
TABLE 1
SEX AGE HEIGHT WEIGHT
7 MALE 33 174 65
TABLE 2
E AGE EVENT
6 33 M
GENERATED JOIN TABLE
SEX AGE HEIGHT (cm) WEIGHT (kg) E AGE EVENT
0 0 FEMALE 18 168 55 0 18 H2
1 0 FEMALE 18 168 55 1 18 C1
4 9 FEMALE 18 170 55 0 18 H2
5 9 FEMALE 18 170 55 1 18 C1
2 5 FEMALE 20 166 55 2 20 A
3 7 MALE 33 174 65 6 33 M

Fig.85

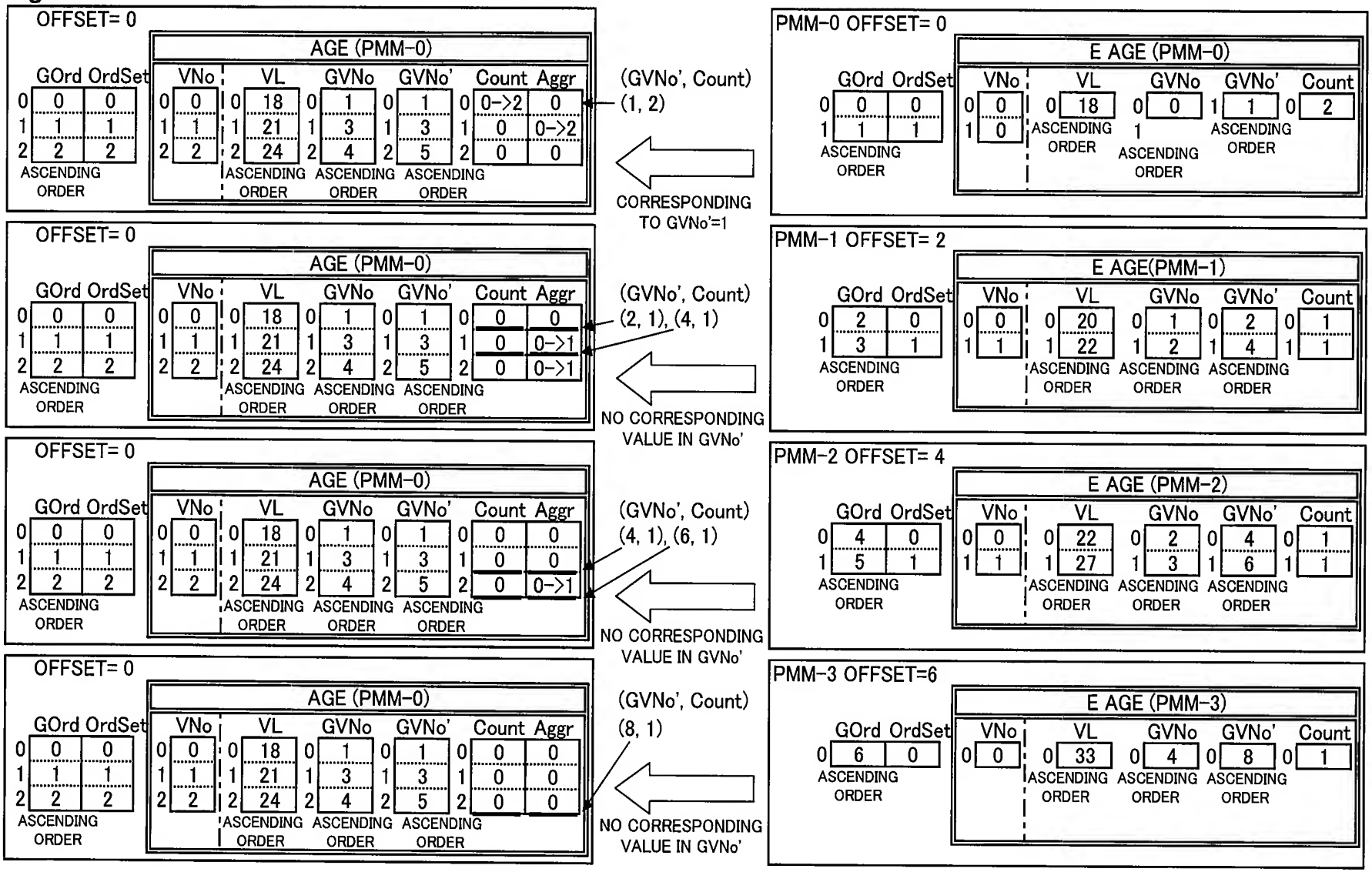

OFFSET= 0
AGE (PMM-0)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
CORRESPONDING TO GVNo'=1
PMM-0 OFFSET= 0
E AGE (PMM-0)
VNo VL GVNo GVNo' Count
OFFSET= 0
AGE (PMM-0)
(GVNo', Count)
(2, 1), (4, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-1 OFFSET= 2
E AGE(PMM-1)
OFFSET= 0
AGE (PMM-0)
(GVNo', Count)
(4, 1), (6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
OFFSET= 0
AGE (PMM-0)
(GVNo', Count)
(8, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.86

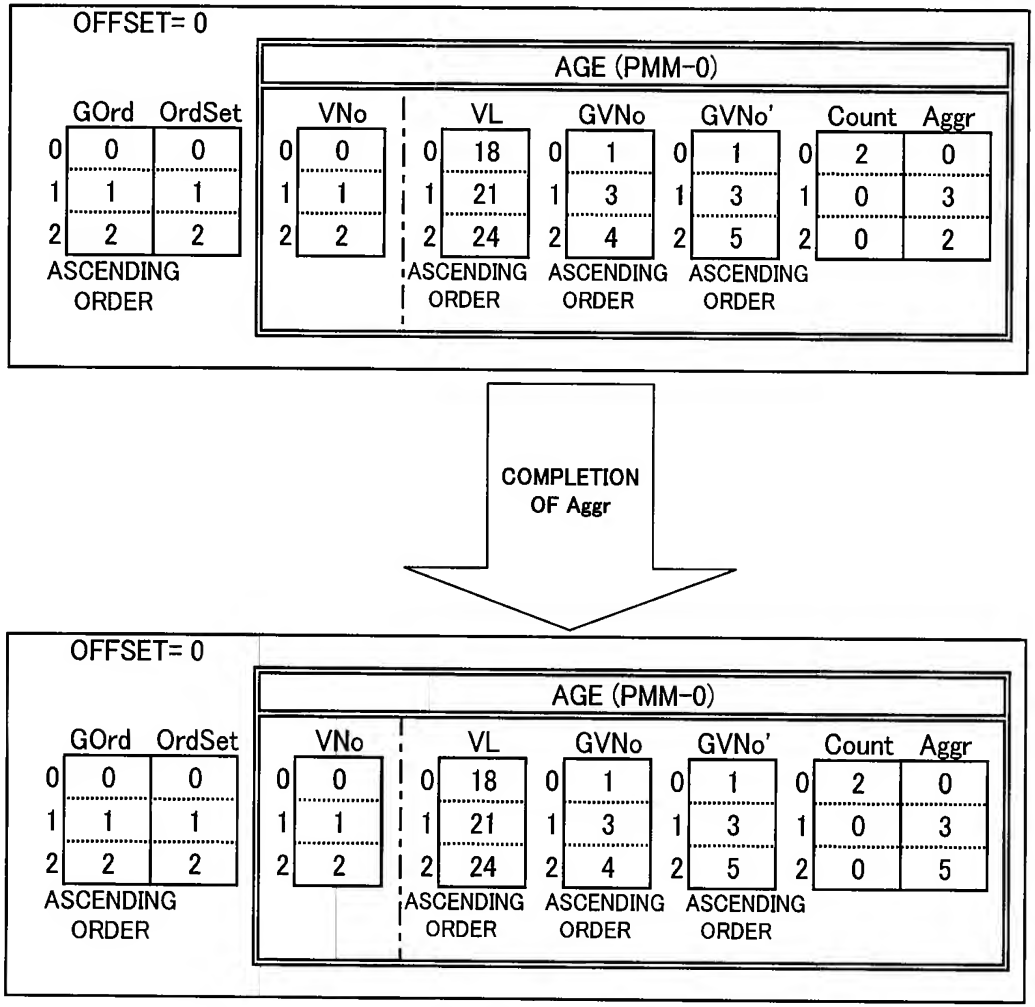

OFFSET= 0
AGE (PMM-0)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
ASCENDING ORDER
COMPLETION OF Aggr
OFFSET= 0
AGE (PMM-0)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
ASCENDING ORDER

Fig.87

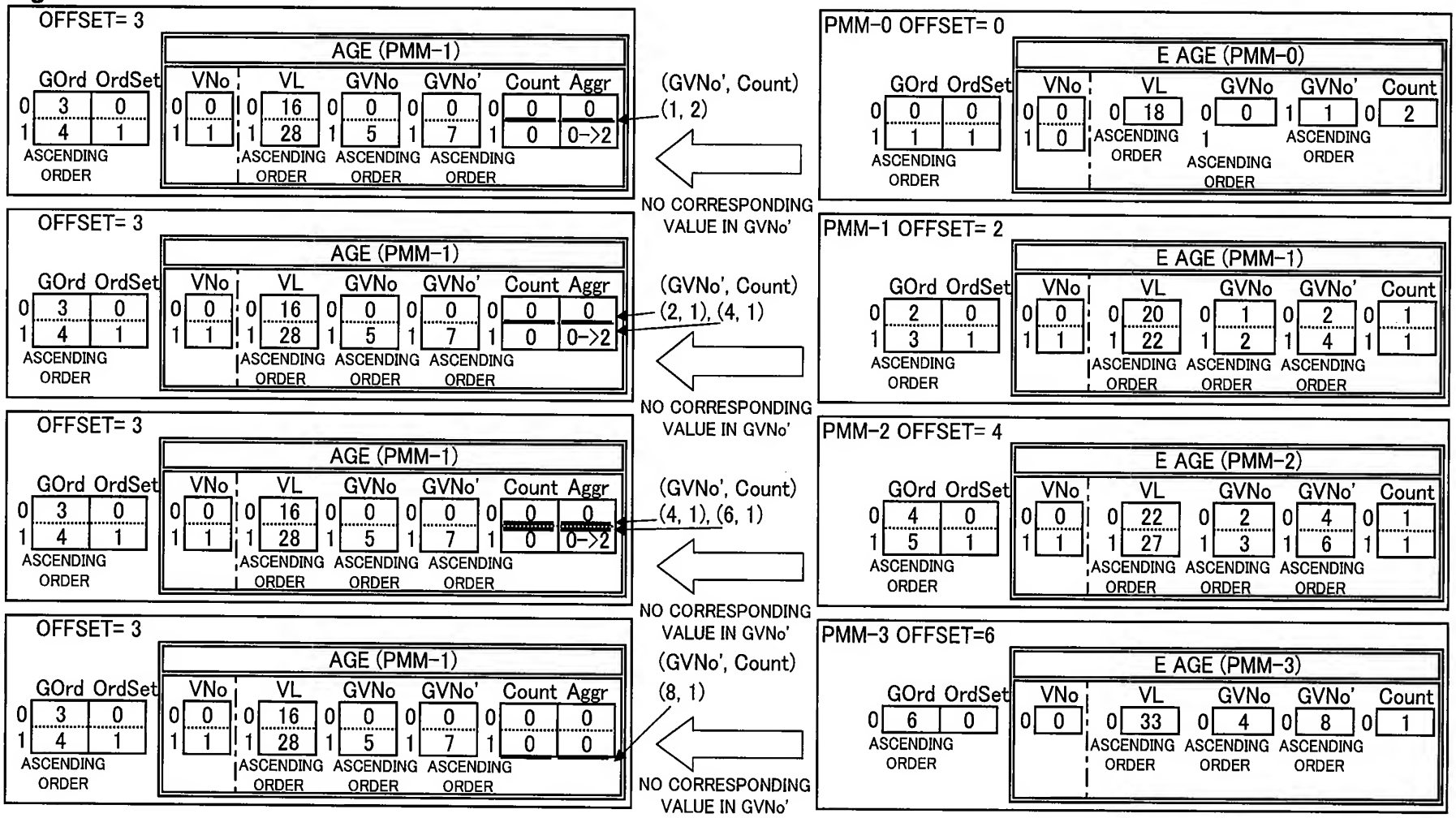

OFFSET= 3
AGE (PMM-1)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-0 OFFSET= 0
E AGE (PMM-0)
VNo VL GVNo GVNo' Count
OFFSET= 3
AGE (PMM-1)
(GVNo', Count)
(2, 1), (4, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-1 OFFSET= 2
E AGE (PMM-1)
OFFSET= 3
AGE (PMM-1)
(GVNo', Count)
(4, 1), (6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
OFFSET= 3
AGE (PMM-1)
(GVNo', Count)
(8, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.88

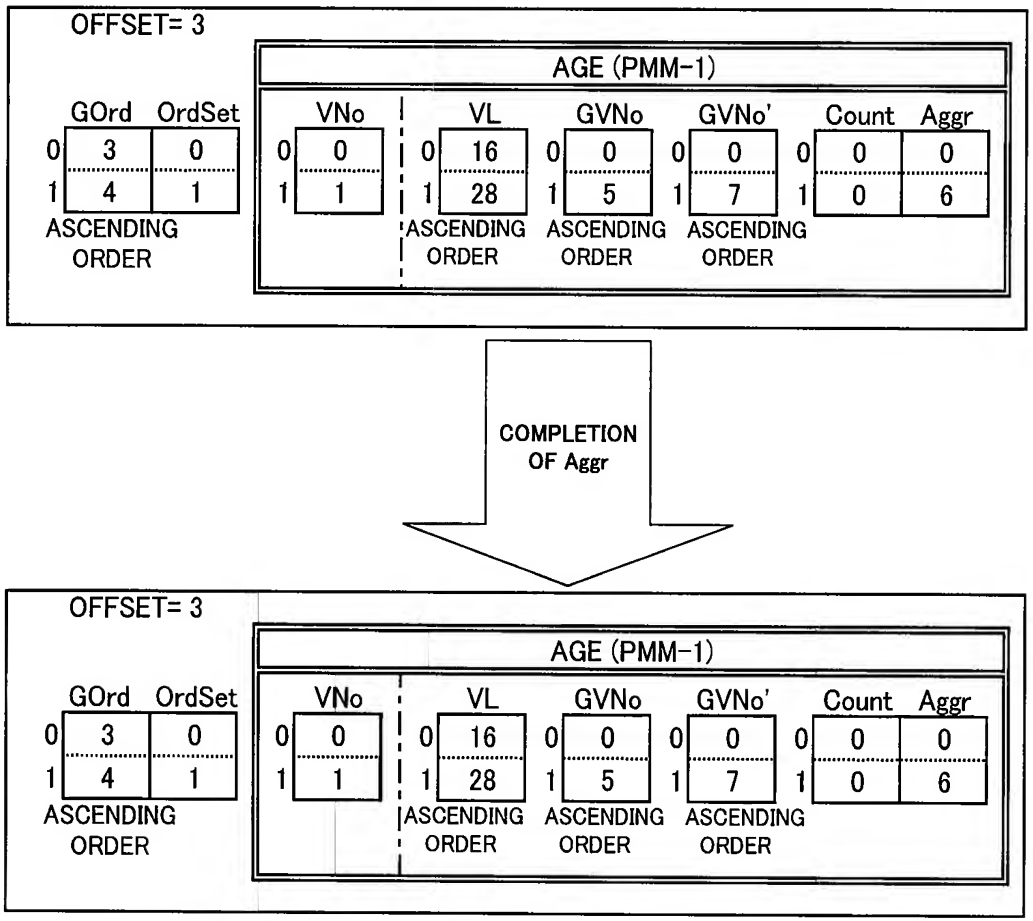

OFFSET= 3
AGE (PMM-1)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 3 0
1 4 1
ASCENDING ORDER
0 0
1 1
0 16
1 28
ASCENDING ORDER
0 0
1 5
ASCENDING ORDER
0 0
1 7
ASCENDING ORDER
0 0 0
1 0 6
COMPLETION OF Aggr
OFFSET= 3
AGE (PMM-1)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 3 0
1 4 1
ASCENDING ORDER
0 0
1 1
0 16
1 28
ASCENDING ORDER
0 0
1 5
ASCENDING ORDER
0 0
1 7
ASCENDING ORDER
0 0 0
1 0 6

Fig.89

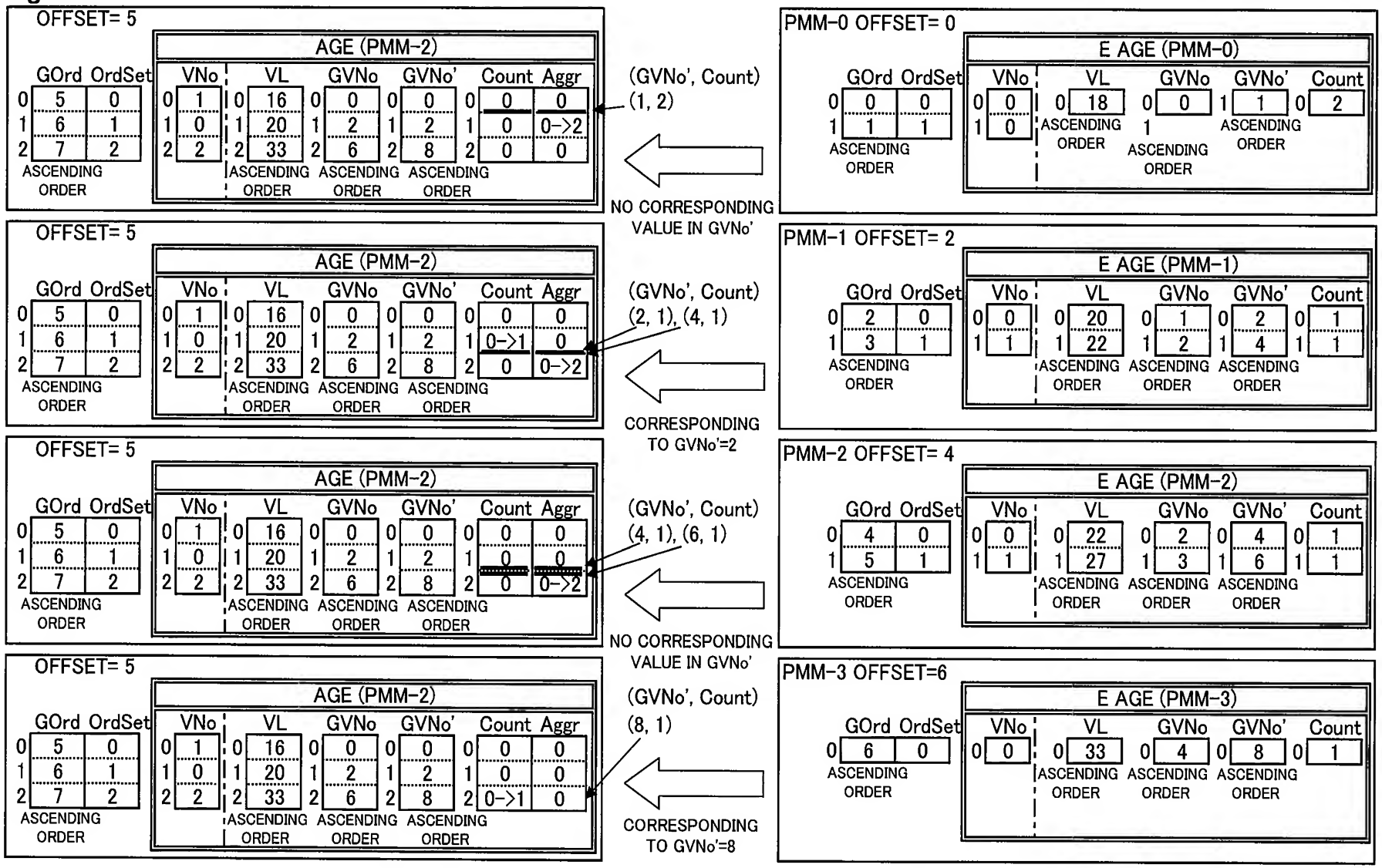

OFFSET= 5
AGE (PMM-2)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
NO CORRESPONDING VALUE IN GVNo'
PMM-0 OFFSET= 0
E AGE (PMM-0)
VNo VL GVNo GVNo' Count
(GVNo', Count)
(2, 1), (4, 1)
CORRESPONDING TO GVNo'=2
PMM-1 OFFSET= 2
E AGE (PMM-1)
(GVNo', Count)
(4, 1), (6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
(GVNo', Count)
(8, 1)
CORRESPONDING TO GVNo'=8
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.90

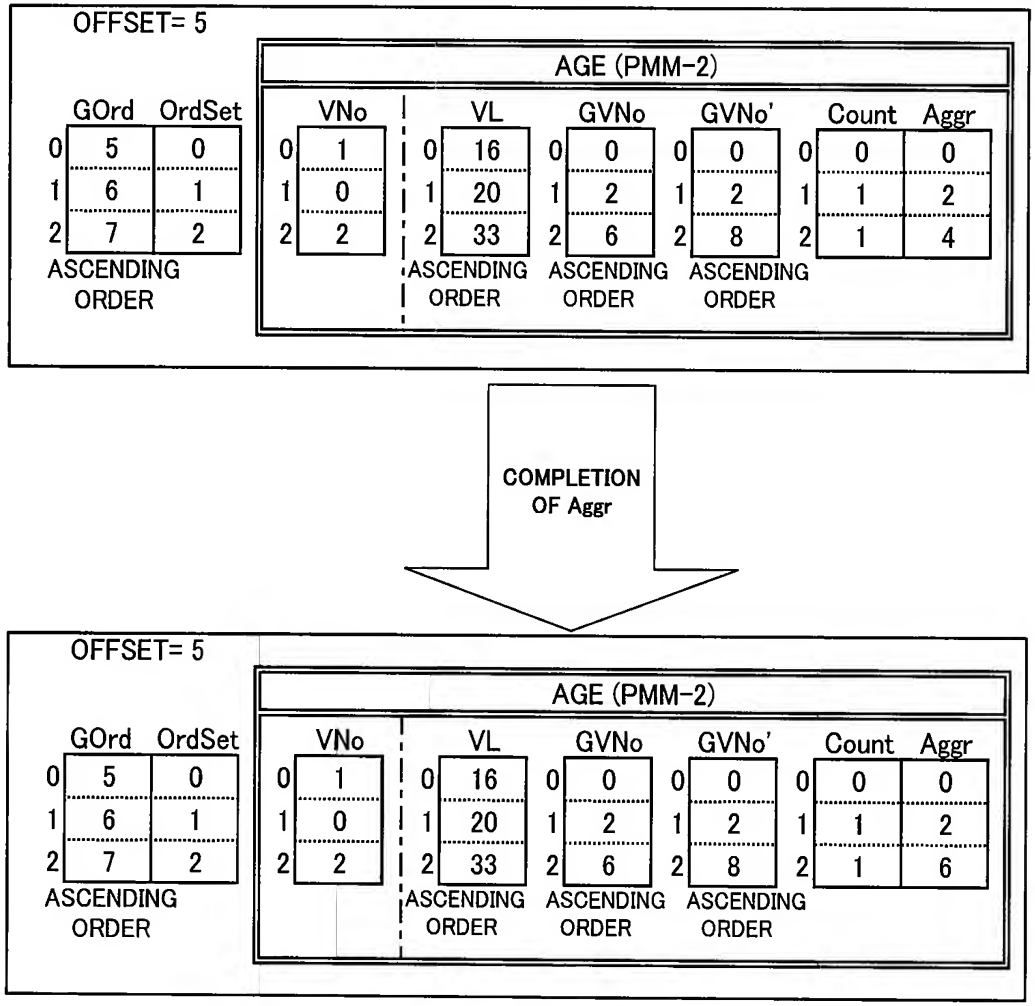

OFFSET= 5
AGE (PMM-2)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
0 1
1 0
2 2
0 16
1 20
2 33
ASCENDING ORDER
0 0
1 2
2 6
ASCENDING ORDER
0 0
1 2
2 8
ASCENDING ORDER
0 0 0
1 1 2
2 1 4
COMPLETION OF Aggr
OFFSET= 5
AGE (PMM-2)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 5 0
1 6 1
2 7 2
ASCENDING ORDER
0 1
1 0
2 2
0 16
1 20
2 33
ASCENDING ORDER
0 0
1 2
2 6
ASCENDING ORDER
0 0
1 2
2 8
ASCENDING ORDER
0 0 0
1 1 2
2 1 6

Fig.91

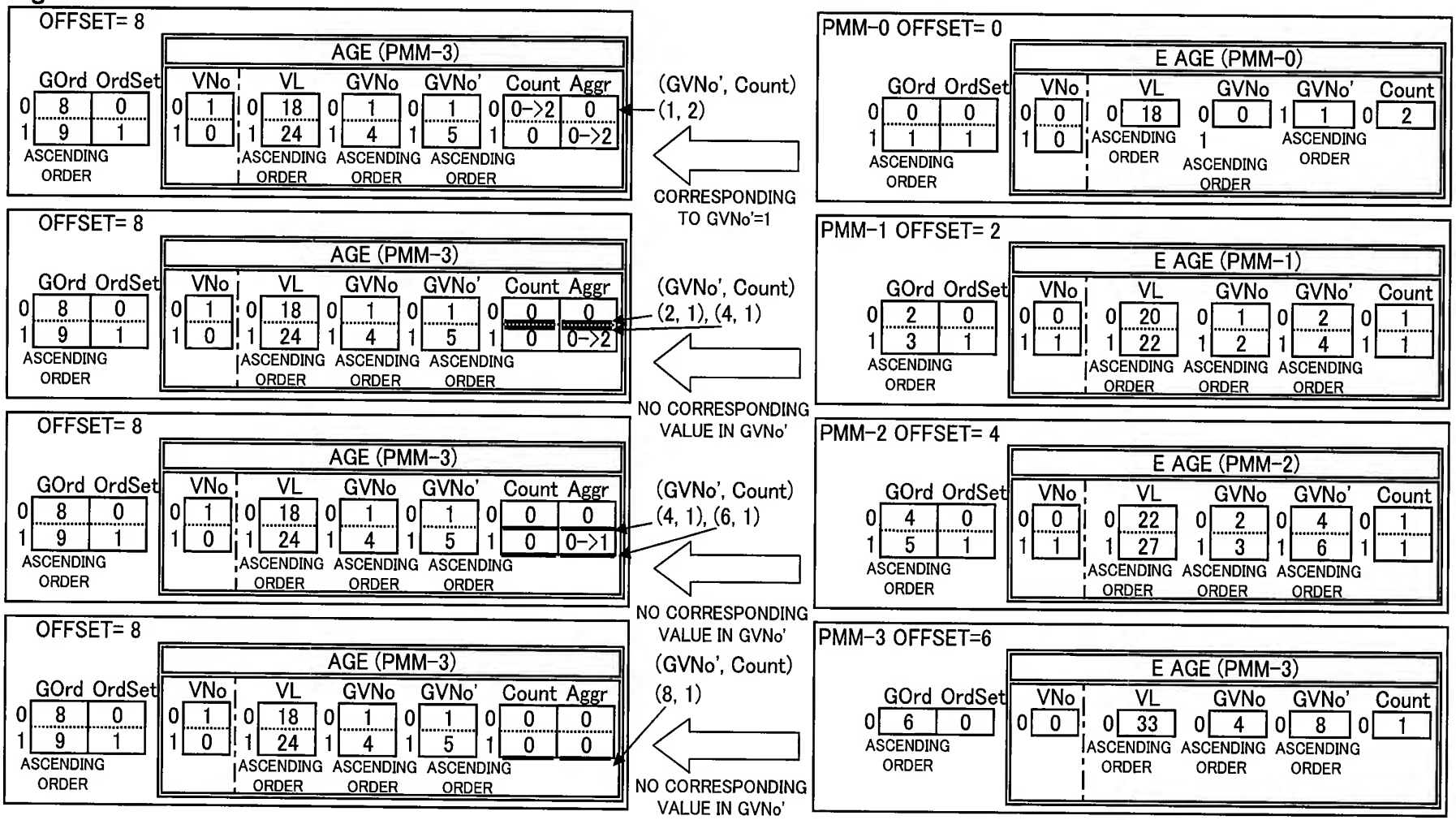

OFFSET= 8
AGE (PMM-3)
GOrd OrdSet
VNo VL GVNo GVNo' Count Aggr
ASCENDING ORDER
(GVNo', Count)
(1, 2)
CORRESPONDING TO GVNo'=1
PMM-0 OFFSET= 0
E AGE (PMM-0)
OFFSET= 8
AGE (PMM-3)
(GVNo', Count)
(2, 1), (4, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-1 OFFSET= 2
E AGE (PMM-1)
OFFSET= 8
AGE (PMM-3)
(GVNo', Count)
(4, 1), (6, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-2 OFFSET= 4
E AGE (PMM-2)
OFFSET= 8
AGE (PMM-3)
(GVNo', Count)
(8, 1)
NO CORRESPONDING VALUE IN GVNo'
PMM-3 OFFSET=6
E AGE (PMM-3)

Fig.92

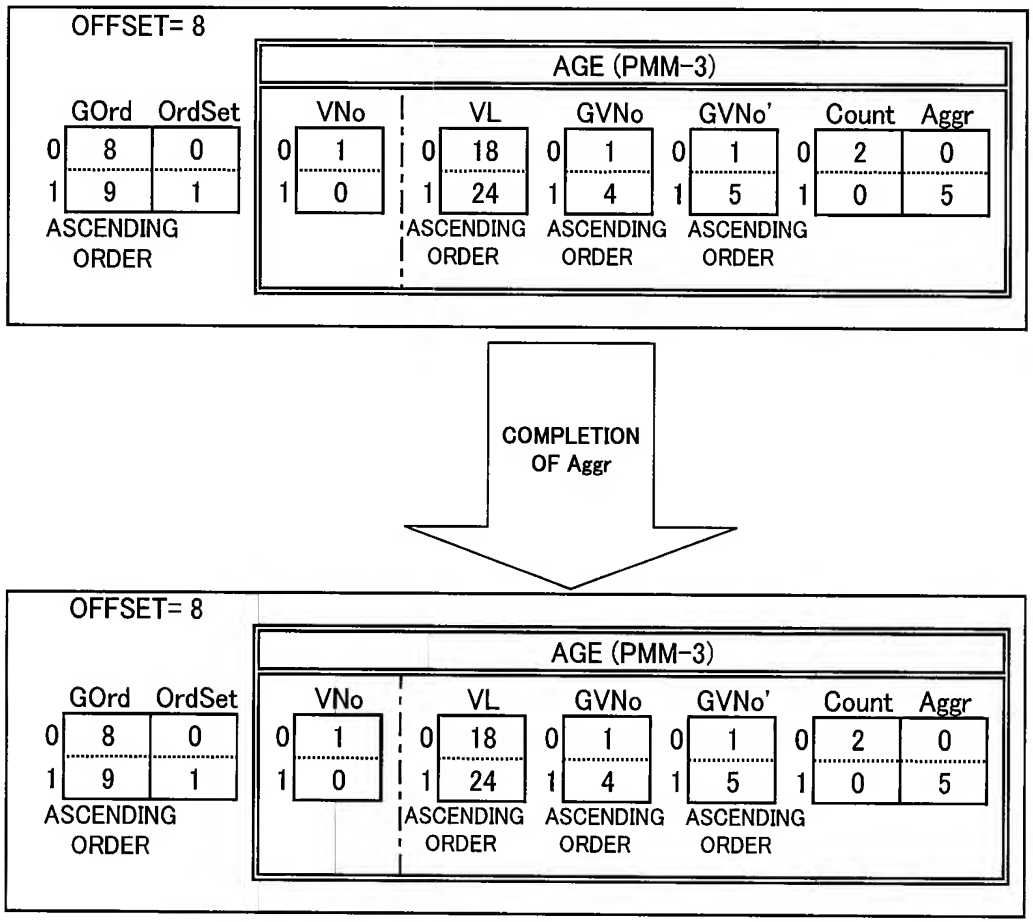

OFFSET= 8
AGE (PMM-3)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 8 0
1 9 1
ASCENDING ORDER
0 1
1 0
0 18
1 24
ASCENDING ORDER
0 1
1 4
ASCENDING ORDER
0 1
1 5
ASCENDING ORDER
0 2 0
1 0 5
COMPLETION OF Aggr
OFFSET= 8
AGE (PMM-3)
GOrd
OrdSet
VNo
VL
GVNo
GVNo'
Count
Aggr
0 8 0
1 9 1
ASCENDING ORDER
0 1
1 0
0 18
1 24
ASCENDING ORDER
0 1
1 4
ASCENDING ORDER
0 1
1 5
ASCENDING ORDER
0 2 0
1 0 5

Fig.93

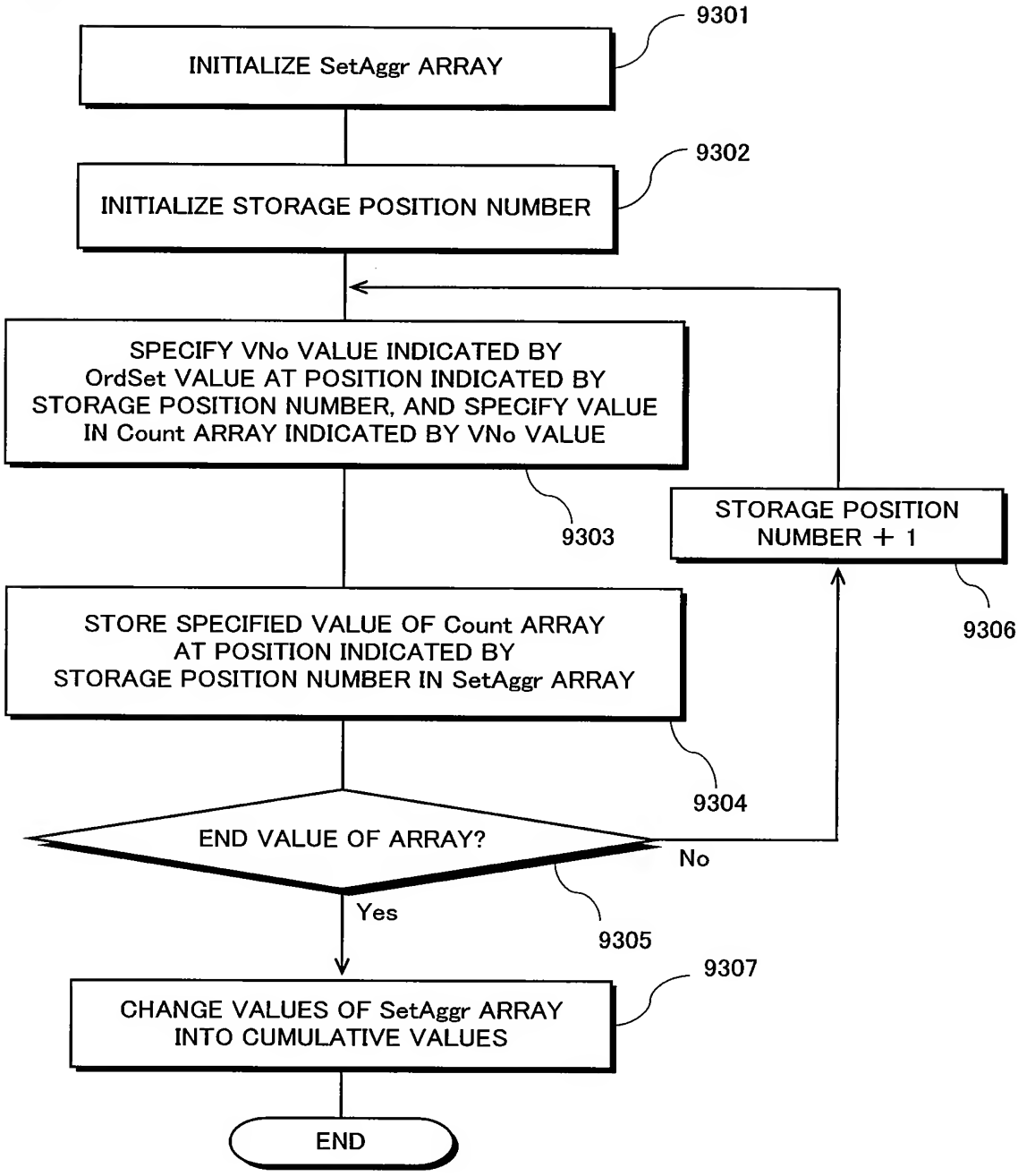

INITIALIZE SetAggr ARRAY
9301
INITIALIZE STORAGE POSITION NUMBER
9302
SPECIFY VNo VALUE INDICATED BY OrdSet VALUE AT POSITION INDICATED BY STORAGE POSITION NUMBER, AND SPECIFY VALUE IN Count ARRAY INDICATED BY VNo VALUE
9303
STORAGE POSITION NUMBER + 1
9306
STORE SPECIFIED VALUE OF Count ARRAY AT POSITION INDICATED BY STORAGE POSITION NUMBER IN SetAggr ARRAY
9304
END VALUE OF ARRAY?
No
Yes
9305
CHANGE VALUES OF SetAggr ARRAY INTO CUMULATIVE VALUES
9307
END

Fig.94

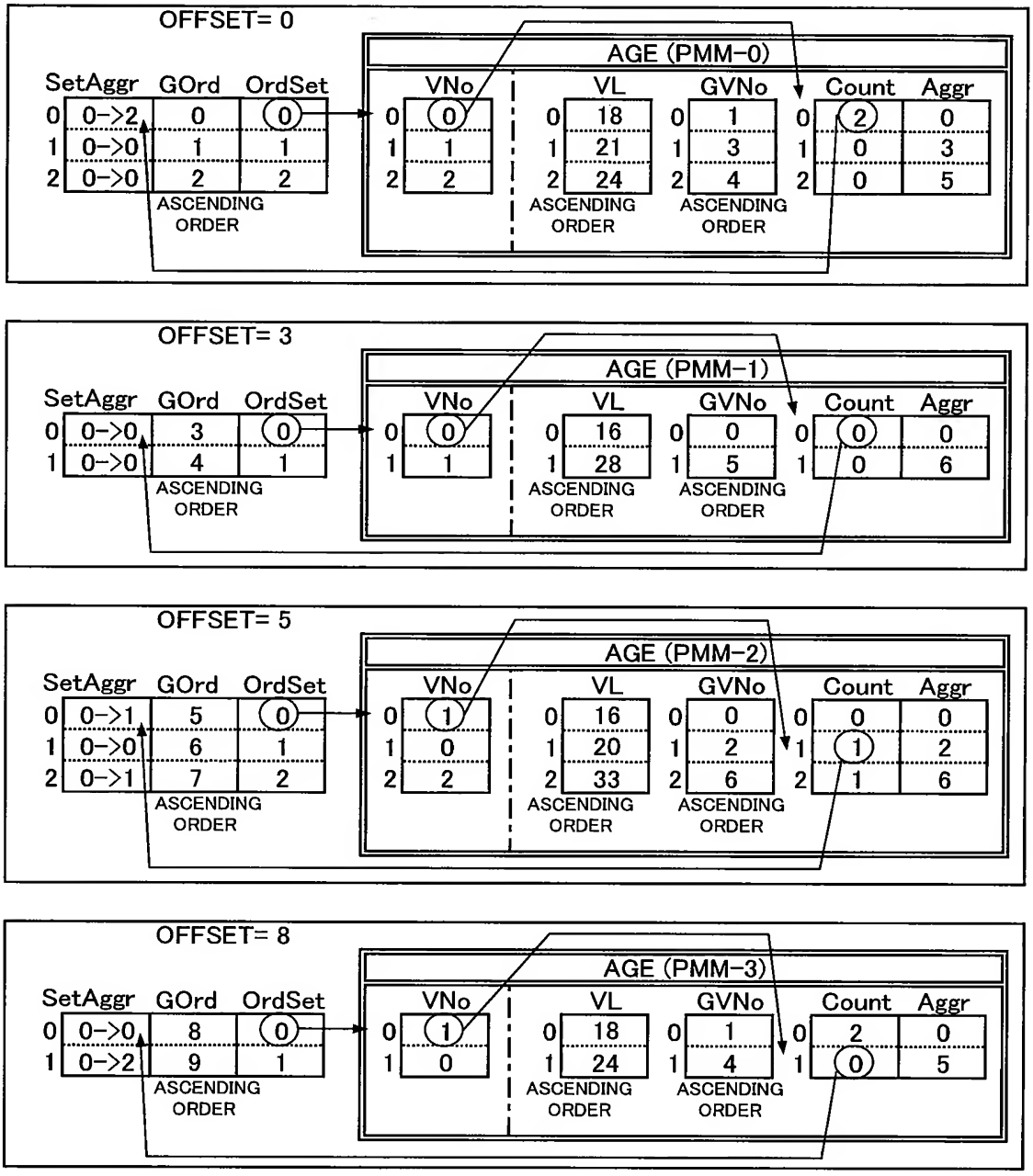
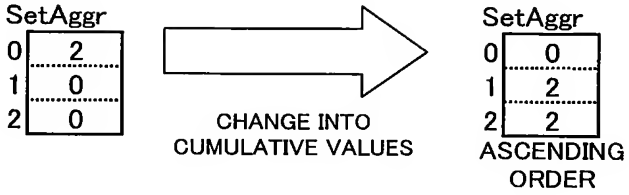

OFFSET= 0
SetAggr GOrd OrdSet
0 0->2 0 0
1 0->0 1 1
2 0->0 2 2
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo
0 1
1 3
2 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 3
2 0 5
OFFSET= 3
SetAggr GOrd OrdSet
0 0->0 3 0
1 0->0 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6
OFFSET= 5
SetAggr GOrd OrdSet
0 0->1 5 0
1 0->0 6 1
2 0->1 7 2
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo
0 0
1 2
2 6
ASCENDING ORDER
Count Aggr
0 0 0
1 1 2
2 1 6
OFFSET= 8
SetAggr GOrd OrdSet
0 0->0 8 0
1 0->2 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 5

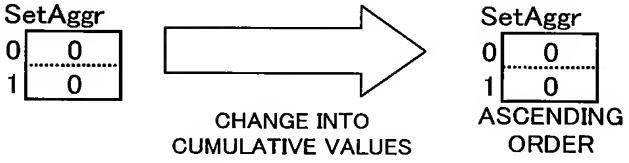
Fig.95A

Fig.95B

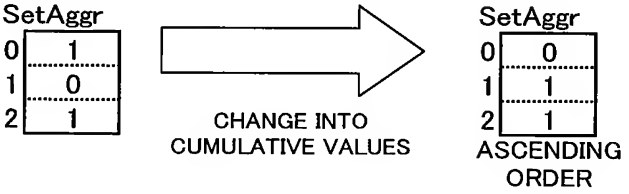
PMM-0



PMM-1



PMM-2



PMM-3

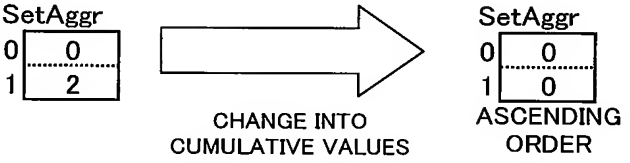


Fig.96

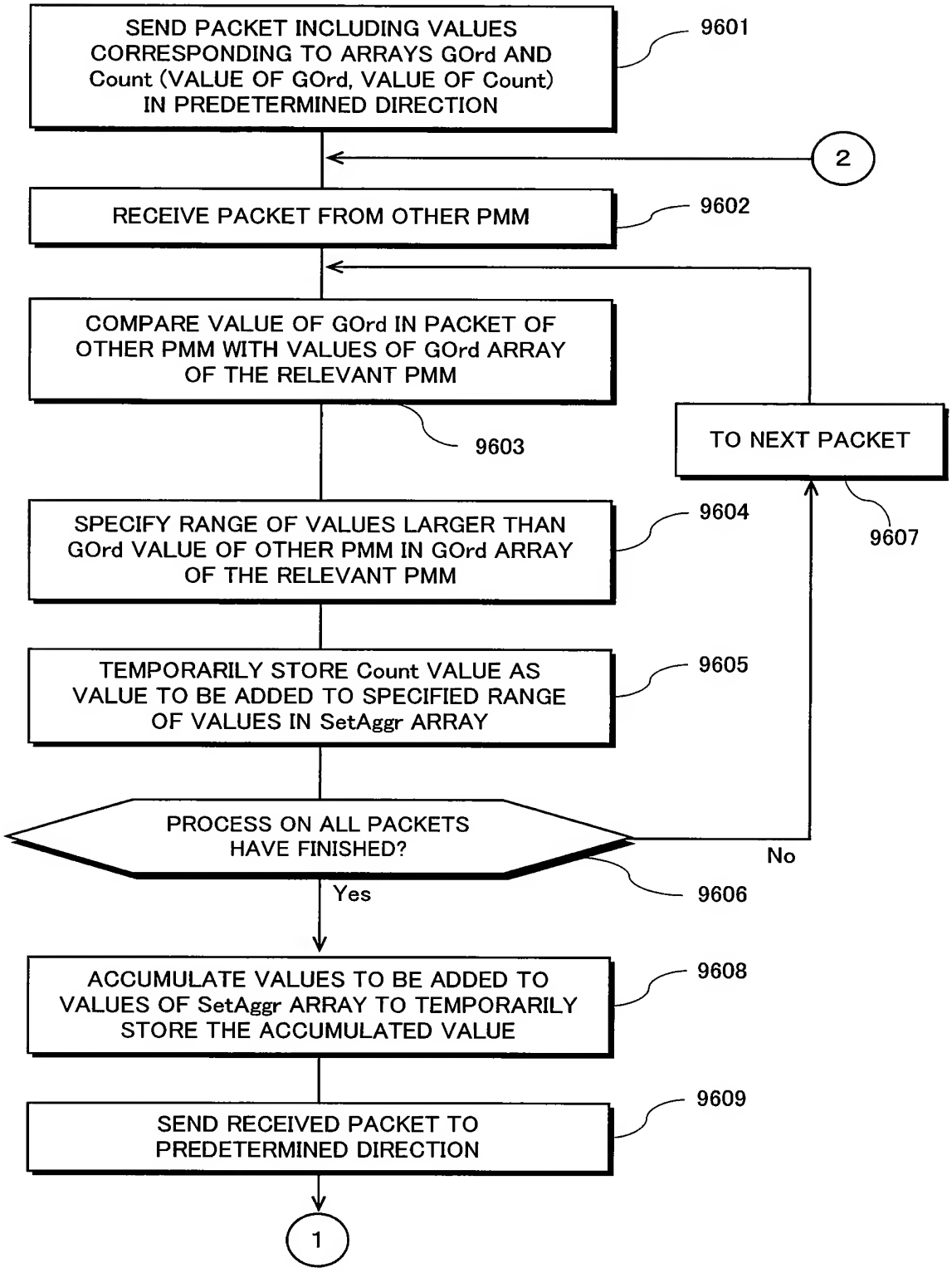

SEND PACKET INCLUDING VALUES CORRESPONDING TO ARRAYS GOrd AND Count (VALUE OF GOrd, VALUE OF Count) IN PREDETERMINED DIRECTION
9601
2
RECEIVE PACKET FROM OTHER PMM
9602
COMPARE VALUE OF GOrd IN PACKET OF OTHER PMM WITH VALUES OF GOrd ARRAY OF THE RELEVANT PMM
9603
TO NEXT PACKET
9607
SPECIFY RANGE OF VALUES LARGER THAN GOrd VALUE OF OTHER PMM IN GOrd ARRAY OF THE RELEVANT PMM
9604
TEMPORARILY STORE Count VALUE AS VALUE TO BE ADDED TO SPECIFIED RANGE OF VALUES IN SetAggr ARRAY
9605
PROCESS ON ALL PACKETS HAVE FINISHED?
No
9606
Yes
ACCUMULATE VALUES TO BE ADDED TO VALUES OF SetAggr ARRAY TO TEMPORARILY STORE THE ACCUMULATED VALUE
9608
SEND RECEIVED PACKET TO PREDETERMINED DIRECTION
9609
1

Fig.97

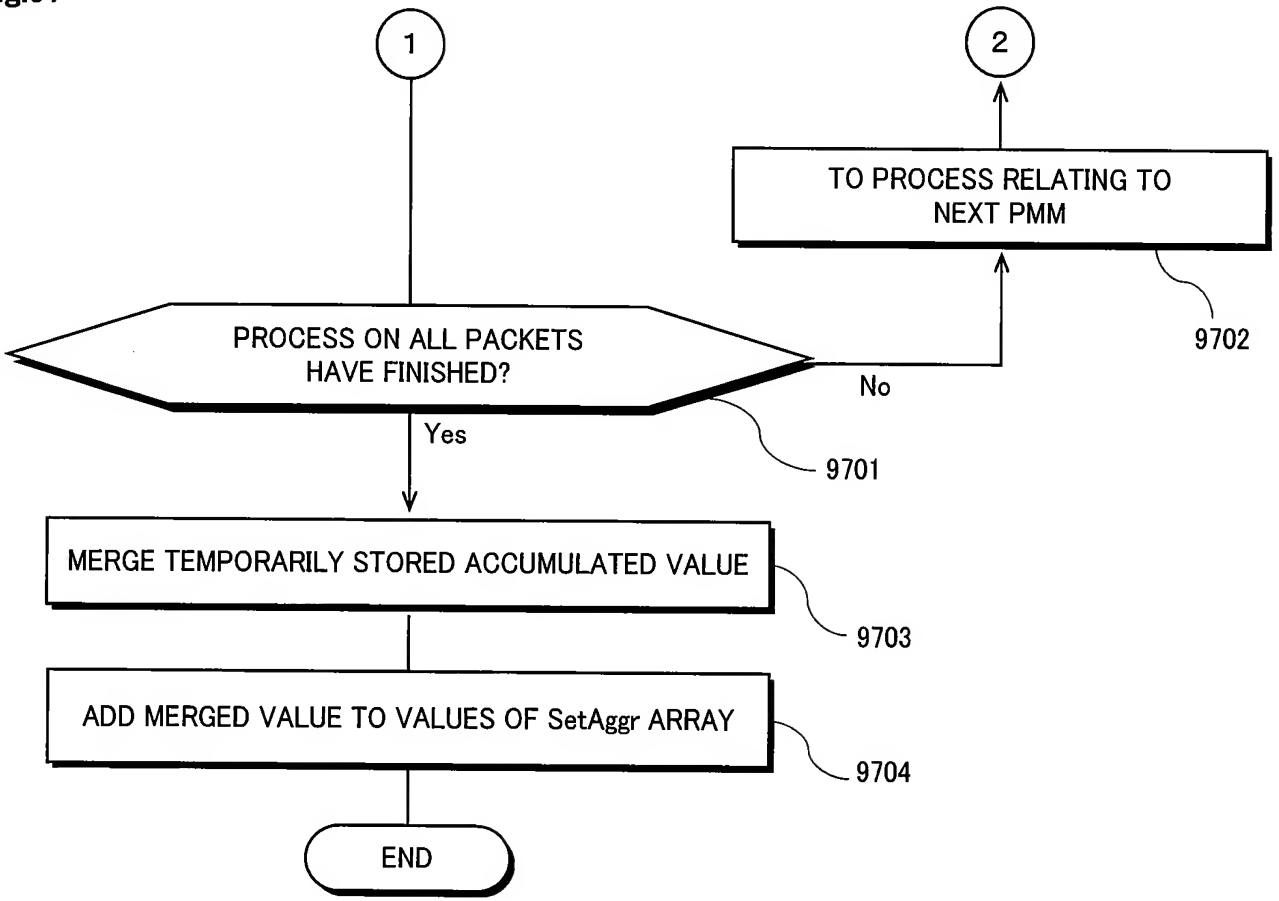

1
2
TO PROCESS RELATING TO NEXT PMM
9702
PROCESS ON ALL PACKETS HAVE FINISHED?
No
Yes
9701
MERGE TEMPORARILY STORED ACCUMULATED VALUE
9703
ADD MERGED VALUE TO VALUES OF SetAggr ARRAY
9704
END

Fig.98

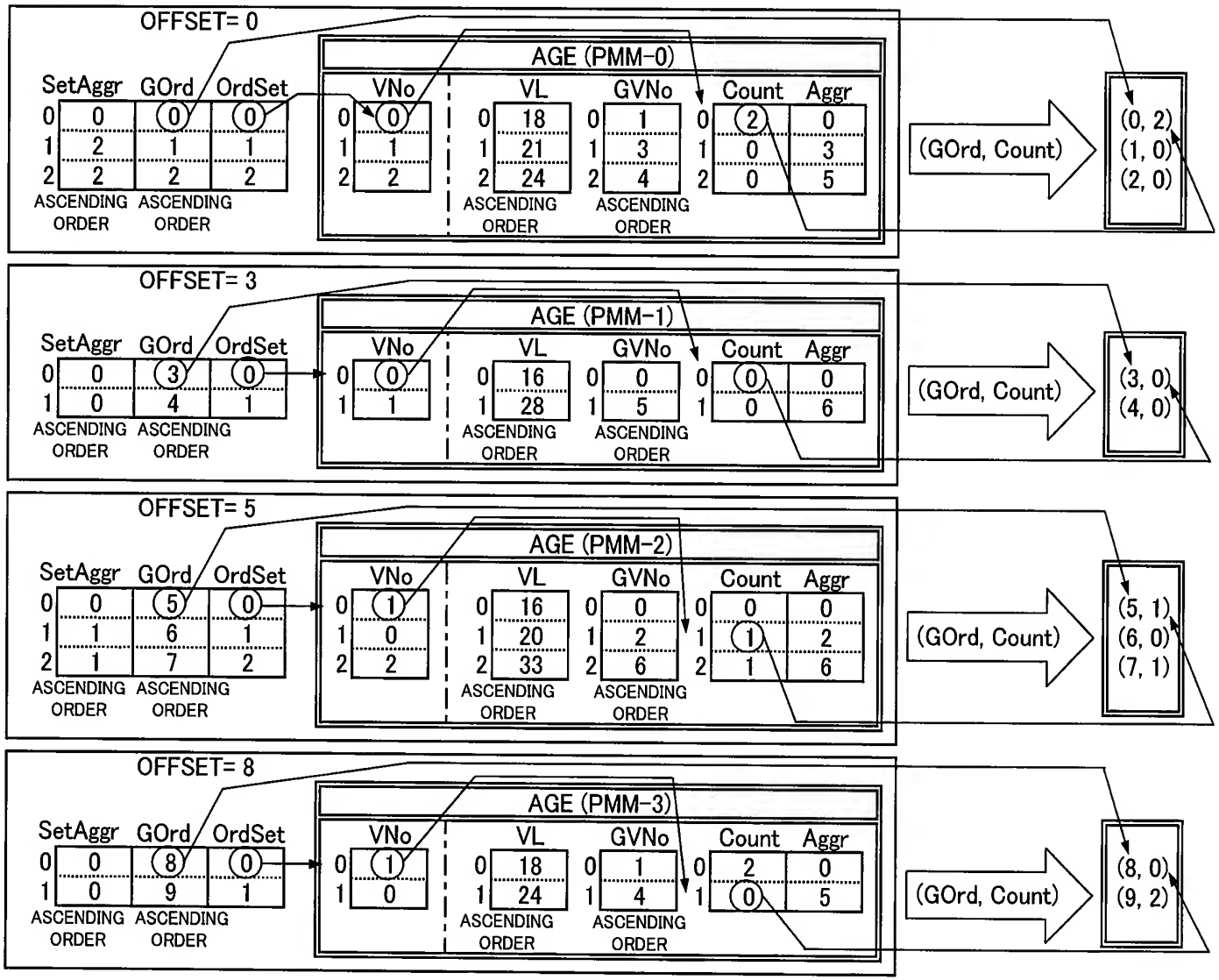

OFFSET= 0
SetAggr GOrd OrdSet
0 0 0 0
1 2 1 1
2 2 2 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-0)
VNo
0 0
1 1
2 2
VL
0 18
1 21
2 24
ASCENDING ORDER
GVNo
0 1
1 3
2 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 3
2 0 5
(GOrd, Count)
(0, 2)
(1, 0)
(2, 0)
OFFSET= 3
SetAggr GOrd OrdSet
0 0 3 0
1 0 4 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6
(GOrd, Count)
(3, 0)
(4, 0)
OFFSET= 5
SetAggr GOrd OrdSet
0 0 5 0
1 1 6 1
2 1 7 2
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-2)
VNo
0 1
1 0
2 2
VL
0 16
1 20
2 33
ASCENDING ORDER
GVNo
0 0
1 2
2 6
ASCENDING ORDER
Count Aggr
0 0 0
1 1 2
2 1 6
(GOrd, Count)
(5, 1)
(6, 0)
(7, 1)
OFFSET= 8
SetAggr GOrd OrdSet
0 0 8 0
1 0 9 1
ASCENDING ORDER
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 5
(GOrd, Count)
(8, 0)
(9, 2)

Fig.99

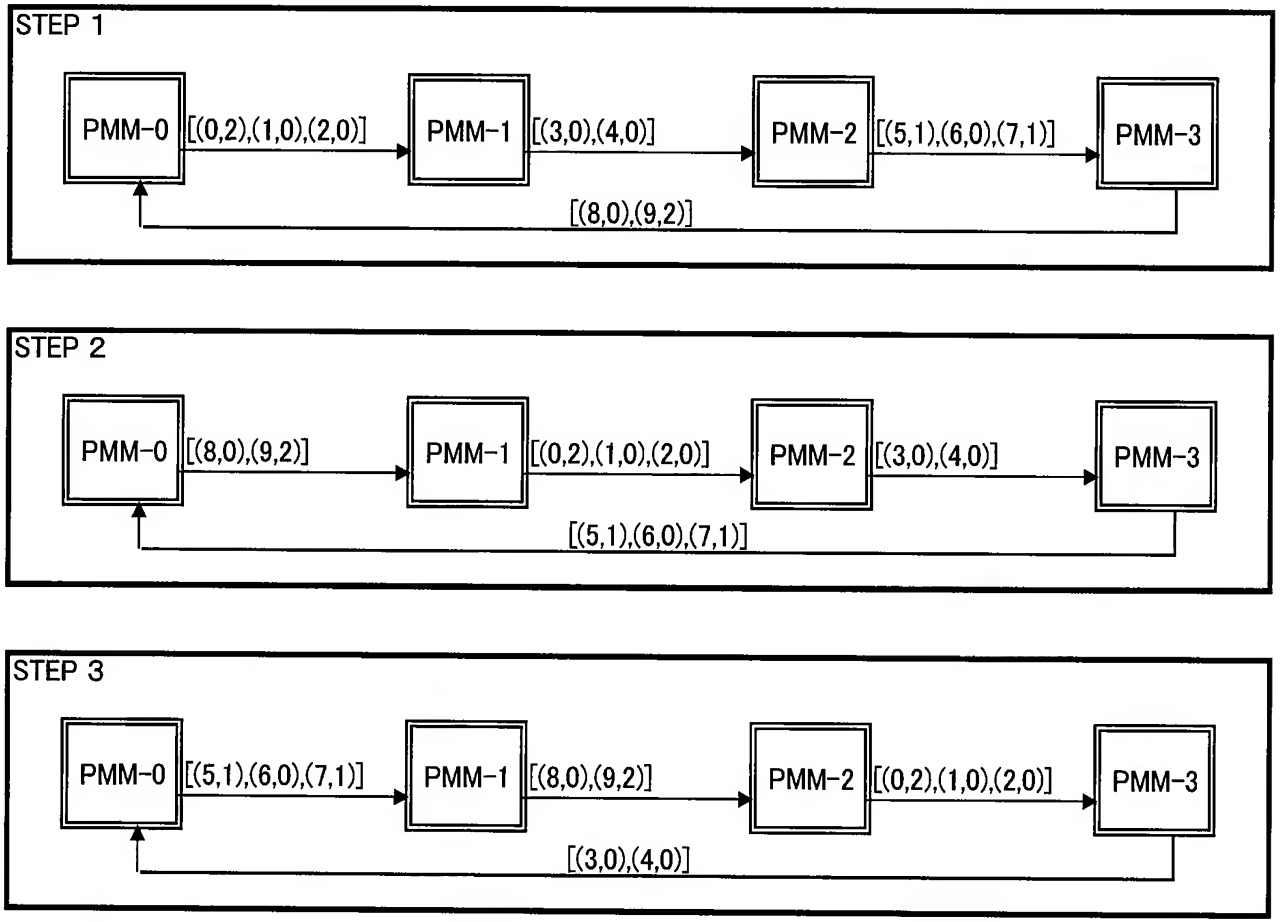

STEP 1
PMM-0
[(0,2),(1,0),(2,0)]
PMM-1
[(3,0),(4,0)]
PMM-2
[(5,1),(6,0),(7,1)]
PMM-3
[(8,0),(9,2)]
STEP 2
PMM-0
[(8,0),(9,2)]
PMM-1
[(0,2),(1,0),(2,0)]
PMM-2
[(3,0),(4,0)]
PMM-3
[(5,1),(6,0),(7,1)]
STEP 3
PMM-0
[(5,1),(6,0),(7,1)]
PMM-1
[(8,0),(9,2)]
PMM-2
[(0,2),(1,0),(2,0)]
PMM-3
[(3,0),(4,0)]

Fig.100

STEP 1

RECEIVED LIST			
PMM-0 [(8,0),(9,2)]	PMM-1 [(0,2),(1,0),(2,0)]	PMM-2 [(3,0),(4,0)]	PMM-3 [(5,1),(6,0),(7,1)]

STEP 2

RECEIVED LIST			
PMM-0 [(8,0),(9,2)] [(5,1),(6,0),(7,1)]	PMM-1 [(0,2),(1,0),(2,0)] [(8,0),(9,2)]	PMM-2 [(3,0),(4,0)] [(0,2),(1,0),(2,0)]	PMM-3 [(5,1),(6,0),(7,1)] [(3,0),(4,0)]

STEP 3

RECEIVED LIST			
PMM-0 [(8,0),(9,2)] [(5,1),(6,0),(7,1)] [(3,0),(4,0)]	PMM-1 [(0,2),(1,0),(2,0)] [(8,0),(9,2)] [(5,1),(6,0),(7,1)]	PMM-2 [(3,0),(4,0)] [(0,2),(1,0),(2,0)] [(8,0),(9,2)]	PMM-3 [(5,1),(6,0),(7,1)] [(3,0),(4,0)] [(0,2),(1,0),(2,0)]

Fig.101

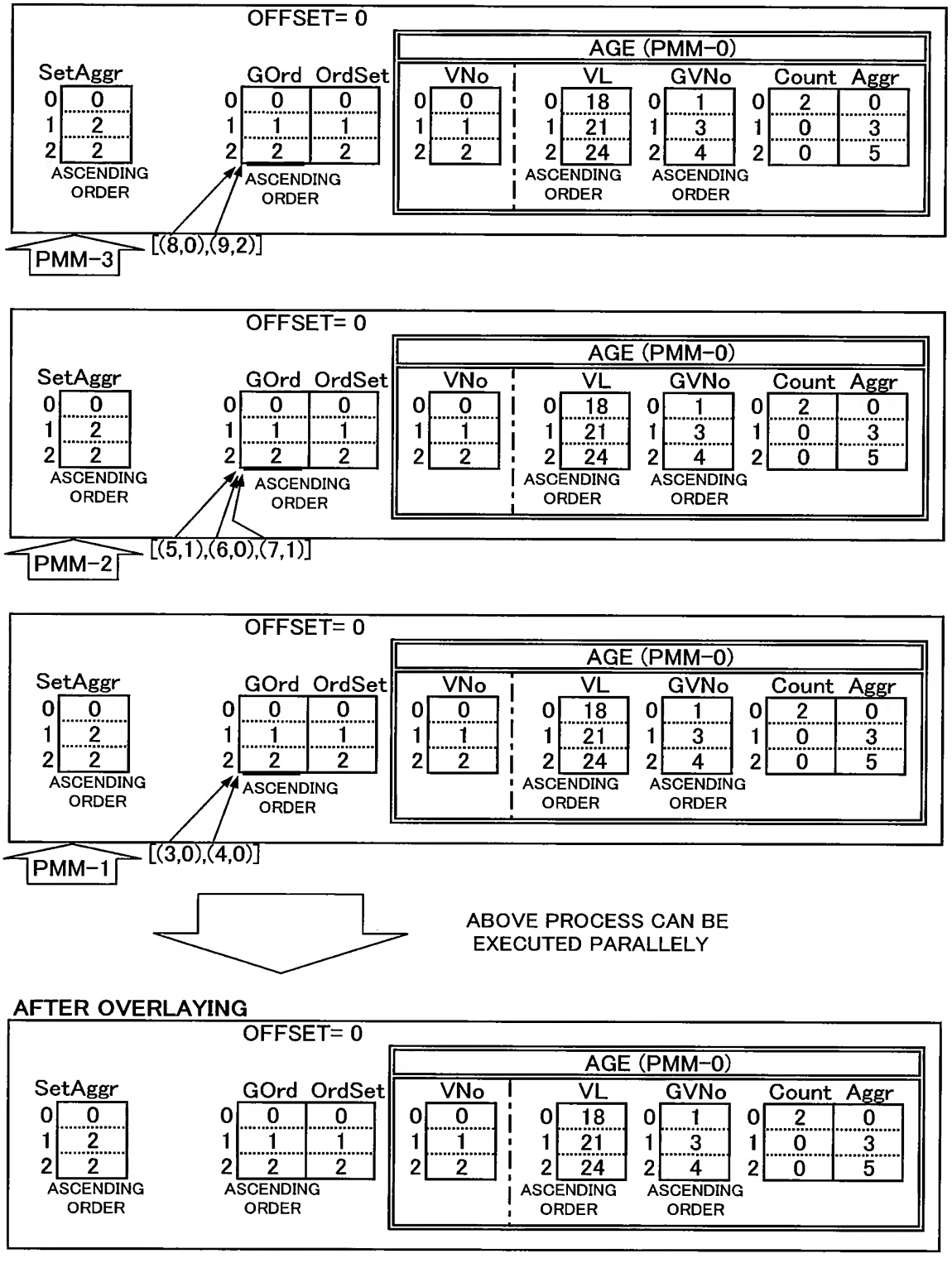

OFFSET= 0
SetAggr
GOrd OrdSet
AGE (PMM-0)
VNo
VL
GVNo
Count Aggr
ASCENDING ORDER
PMM-3
[(8,0),(9,2)]
PMM-2
[(5,1),(6,0),(7,1)]
PMM-1
[(3,0),(4,0)]
ABOVE PROCESS CAN BE EXECUTED PARALLELY
AFTER OVERLAYING

Fig.102

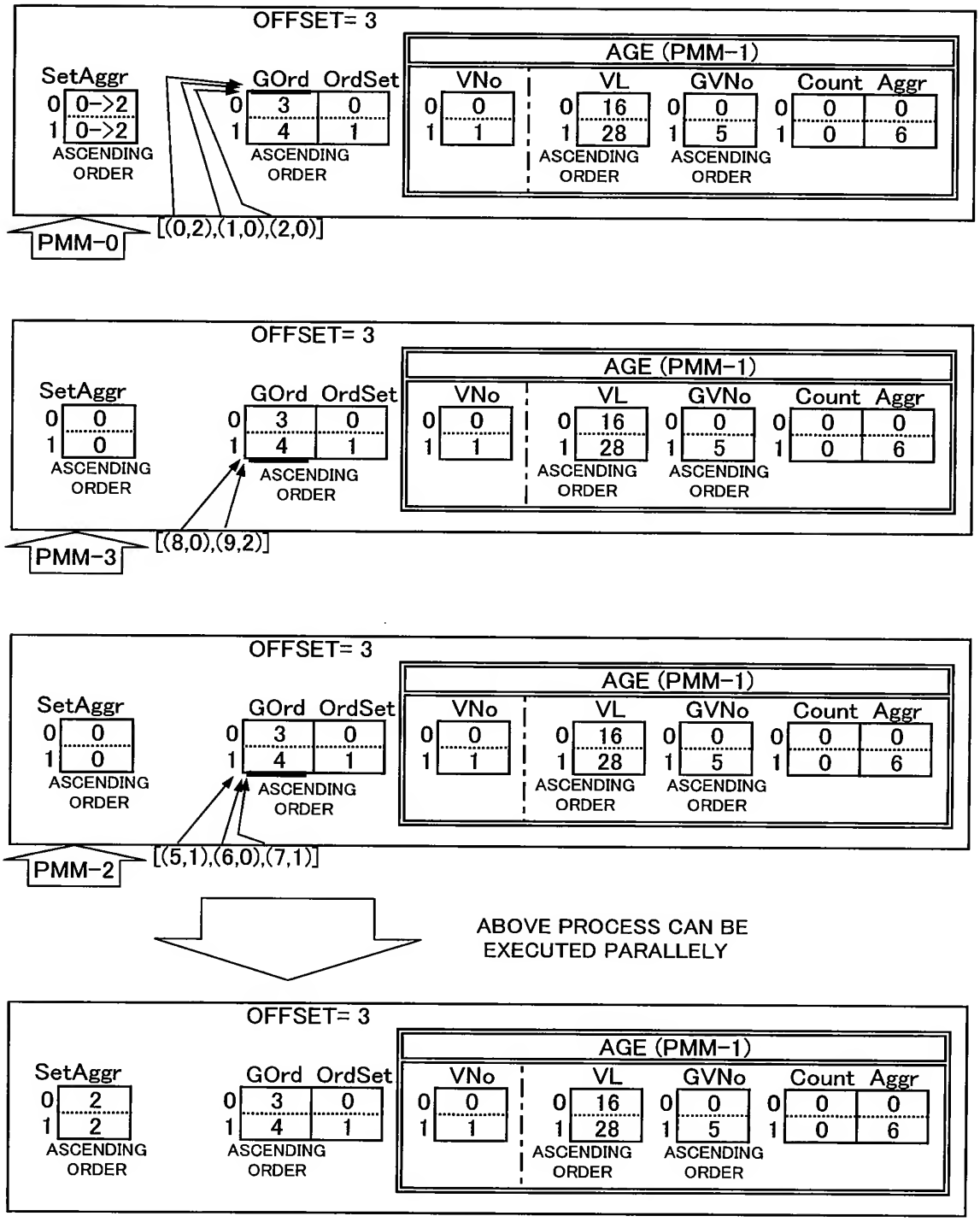
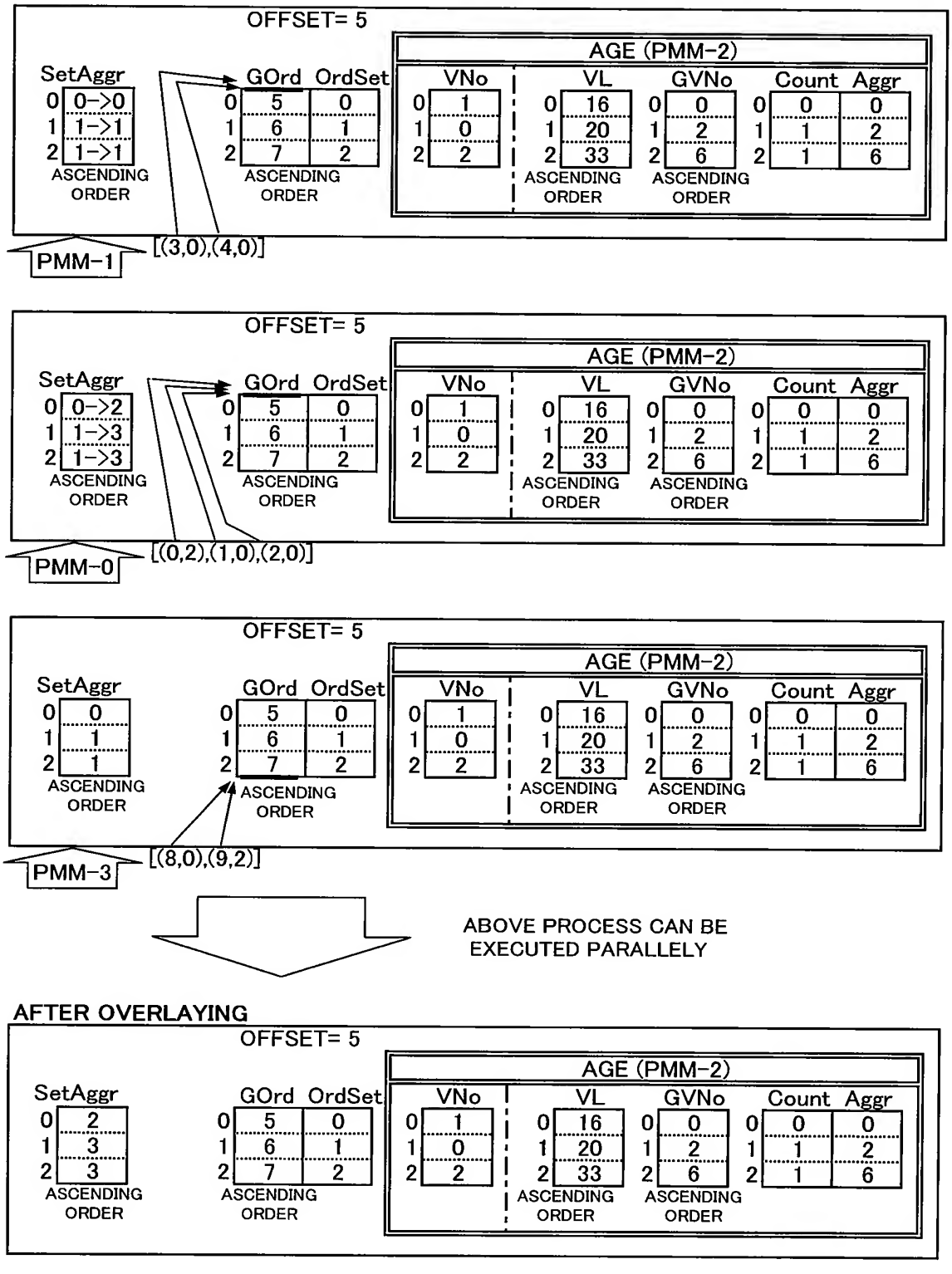
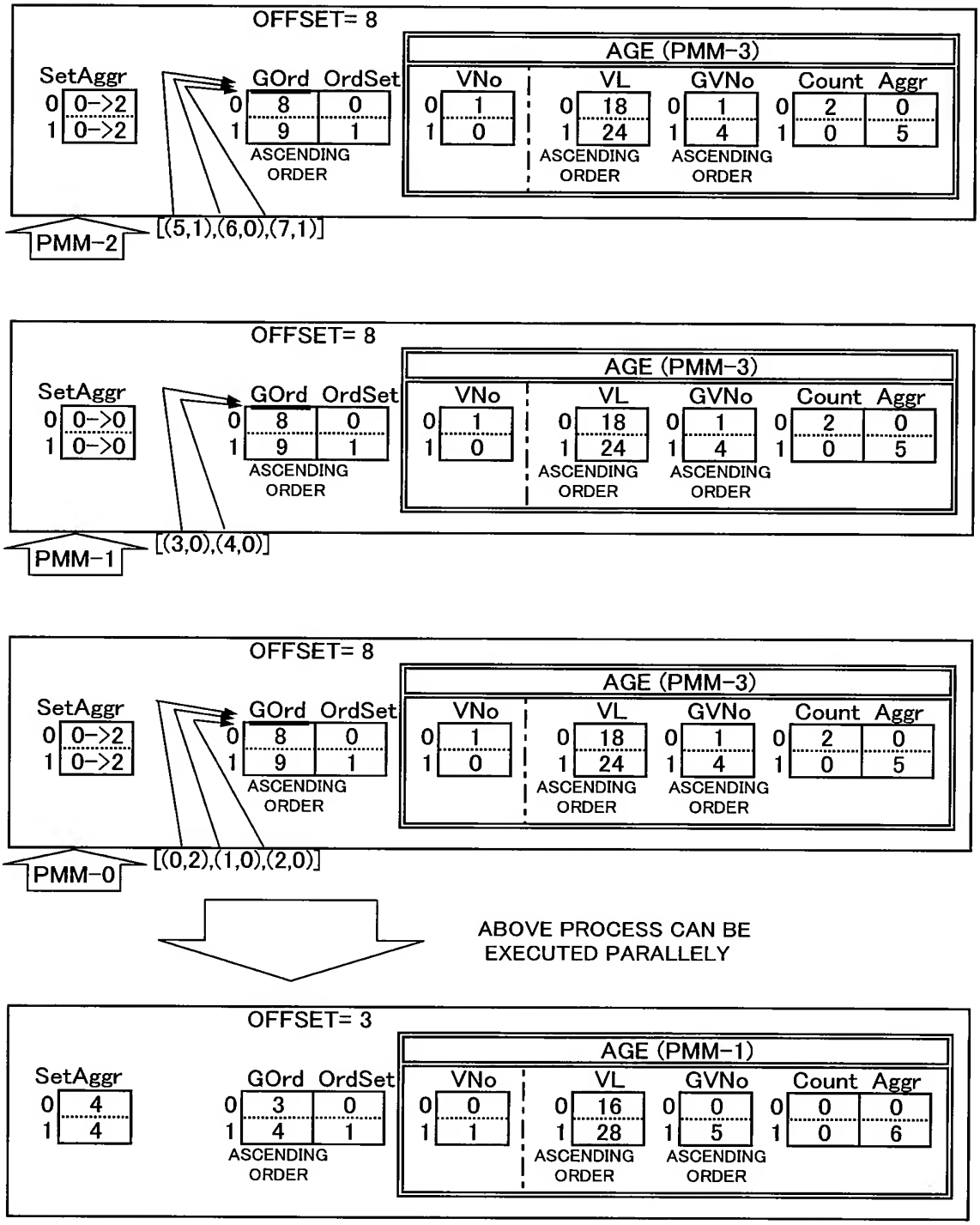

OFFSET= 3
SetAggr
0 0->2
1 0->2
ASCENDING ORDER
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6
PMM-0
[(0,2),(1,0),(2,0)]
OFFSET= 3
SetAggr
0 0
1 0
ASCENDING ORDER
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6
PMM-3
[(8,0),(9,2)]
OFFSET= 3
SetAggr
0 0
1 0
ASCENDING ORDER
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6
PMM-2
[(5,1),(6,0),(7,1)]
ABOVE PROCESS CAN BE EXECUTED PARALLELY
OFFSET= 3
SetAggr
0 2
1 2
ASCENDING ORDER
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6

Fig.103



AFTER OVERLAYING

Fig.104


OFFSET= 8
SetAggr
0 0->2
1 0->2
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 5
PMM-2
[(5,1),(6,0),(7,1)]
OFFSET= 8
SetAggr
0 0->0
1 0->0
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 5
PMM-1
[(3,0),(4,0)]
OFFSET= 8
SetAggr
0 0->2
1 0->2
GOrd OrdSet
0 8 0
1 9 1
ASCENDING ORDER
AGE (PMM-3)
VNo
0 1
1 0
VL
0 18
1 24
ASCENDING ORDER
GVNo
0 1
1 4
ASCENDING ORDER
Count Aggr
0 2 0
1 0 5
PMM-0
[(0,2),(1,0),(2,0)]
ABOVE PROCESS CAN BE EXECUTED PARALLELY
OFFSET= 3
SetAggr
0 4
1 4
GOrd OrdSet
0 3 0
1 4 1
ASCENDING ORDER
AGE (PMM-1)
VNo
0 0
1 1
VL
0 16
1 28
ASCENDING ORDER
GVNo
0 0
1 5
ASCENDING ORDER
Count Aggr
0 0 0
1 0 6